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ABSTRACT

A course was designed to provide an introduction to the various types of instructional media that are currently being utilized for instructional purposes. Students were taught to list the characteristics and advantages of the different types of instructional media, to explain and justify procedures for effectively integrating media into instructional units, and to set up and operate the most commonly used media equipment. This manual first describes the course, its requirements and examinations, and provides a sample individual student progress report and equipment operation objectives. Twelve self-instructional packages to be used as guides through the course subject matter are presented: motion picture film and film projection; filmstrips; individualized instruction; media utilization; overhead and opaque projection; instructional media centers; instructional audio; instructional television; selection and evaluation of educational media; 8mm film and film loops; photography; and programed instruction. (Author/SH)

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MEDIA

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**UTILIZING INSTRUCTIONAL
MEDIA**

JAMES E. DUANE

**A SET OF TWELVE
SELF-INSTRUCTIONAL PACKAGES**

EM 011 633

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UTILIZING INSTRUCTIONAL MEDIA

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U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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COURSE MANUAL FOR ISLR 512 *Principles and Applications of Educational Media*

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INTRODUCTION

This manual consists of a set of twelve self-instructional packages which will be used to guide you through the subject matter of this course.

The packages are designed so that you may proceed at your own rate, and in a manner which you feel is consistent with your own interests and learning styles.

The packages are guidelines that tell you what each unit in the course is about and what you will be expected to do and know after completing each unit. The package then presents a series of alternative ways of achieving the unit objectives. You choose the type of activity that interests you most. For instance, one alternative may be a film and filmstrip viewing activity, and a second alternative may involve reading a journal article or selected pages in a textbook.

All the resources utilized in the packages are available in the lab. The lab is open several days a week, and you may work as long as you desire any day that the lab is open. Almost all of your work in this course will take place in the lab. Most students will spend about four hours a week working in the lab, and will complete one or two packages each week. If a student wishes to get ahead, he or she may finish more than one package a week, thereby completing the course early. However, students may not fall behind; "incomplete" grades will not be given.

The twelve packages and unit topics are as follows:

1. Motion Picture Film and Film Projection
2. Filmstrips
3. Individualized Instruction
4. Media Utilization
5. Overhead and Opaque Projection
6. Instructional Media Centers
7. Instructional Audio
8. Instructional Television
9. Selection - Evaluation of Educational Media
10. 8mm Film and Film Loops
11. Photography
12. Programed Instruction

COURSE DESCRIPTION

This course is designed to provide an introduction to the various types of instructional media that are currently being utilized for instructional purposes. In general, upon completing the course you will be able:

- A. to list the characteristics and advantages of the different types of instructional media.
- B. to explain and justify procedures for effectively integrating media into instructional units.
- C. to set-up and operate the most commonly used media equipment.

The first two objectives will be achieved by completing the individualized instruction packages. The third objective, dealing with equipment operation, will be completed in the self-instructional lab by going through a series of step-by-step slide programs designed to teach the operation of a particular unit of equipment. As with the individualized instruction packages, each student may spend as much time as necessary learning how to operate the assigned equipment.

COURSE REQUIREMENTS

The course requirements fall in three categories. First, each student will successfully complete any ten of the twelve individualized instruction packages. Second, each student will learn to set-up and operate the media equipment as listed on the Equipment Operation Objectives sheet. Third, each student will attend a 30-minute small group discussion session once a week. A sign-up sheet will be provided the first week of the course. There will be several groups, allowing students to choose a time and a day that is convenient.

During the small group discussion sessions, students will have a chance to ask questions related to the course and will answer an oral question on each package completed that week.

COURSE EXAMINATIONS

After completing each package the student will take a post test on that package. The post test will consist of multiple choice and short answer essay questions. Each post test will be worth 20 points. In addition to the written post test, each student will answer one oral question, worth 5 points, in his or her small group discussion session.

An equipment practical exam will be given upon completion of the requirements related to equipment operation. The equipment practical will consist of two

parts. The first part deals with setting-up and operating three units of media equipment randomly chosen from the Equipment Operation Objectives sheet. The second part consists of answering twenty multiple choice quiz questions. The written quiz will be worth 40 points and the equipment operation will be worth 60 points - 20 points for each unit of equipment. Total: 100 points. Each student will make arrangements with the lab assistant to take the equipment practical.

A comprehensive final exam will be given. This exam consists of 5 multiple choice questions on each unit that you complete. Each question will be worth 2 points for a total of 100 points.

INDIVIDUAL STUDENT PROGRESS REPORT

NAME _____

MAJOR _____ CLASS STANDING _____

POINT DISTRIBUTION FORM

Grades will be based on the following point system. This form is to be filled out by you during the quarter, and should be used to monitor your progress during the quarter.

<u>Individualized Instruction Package</u>	<u>Post Test (20 pt. max.)</u>	<u>Oral Question (5 pt. max.)</u>	<u>Total (25 pt. max.)</u>
Motion Picture Film & Film Projection	_____	_____	_____
Filmstrips	_____	_____	_____
Individualized Instruction	_____	_____	_____
Media Utilization	_____	_____	_____
Overhead and Opaque Projection	_____	_____	_____
Instructional Media Centers	_____	_____	_____
Instructional Audio	_____	_____	_____
Instructional Television	_____	_____	_____
Selection - Evaluation of Media	_____	_____	_____
8mm Film and Film Loops	_____	_____	_____
Photography	_____	_____	_____
Programed Instruction	_____	_____	_____
Ten of Twelve Packages Required - Total	_____	(250 pt. max.)	
Equipment Practical	_____	(100 pt. max.)	
Final Examination	_____	(100 pt. max.)	
SUBTOTAL	_____	(450 pt. max.)	
Quests (10 pts. each max.)	_____	(60 pt. max.)	
TOTAL POINTS	_____	(510 pt. max.)	

NOTE: To receive an "A" for the course, it may be necessary to complete one or more Quest activities in order to bring your point total above 450 points.

Grade Distribution: Above 450 Points = A
 Above 410 Points = B
 Above 375 Points = C
 Above 340 Points = C

FINAL GRADE _____

EQUIPMENT OPERATION OBJECTIVES

At the end of this unit, each student should be able to:

Set-up and operate the following equipment

Graflex 16mm Projector

Bell and Howell 16mm Manual Projector

Bell and Howell 16mm Autoload Projector

Kodak 16mm Projector

RCA/Viewlex 16mm Projector

Carousel or Ektagraphic Slide Projector

Bell and Howell Filmstrip Projector

Standard or Viewlex Slide/Filmstrip Projector

Wollensak Reel-to-Reel Tape Recorder

Kodak Super 8mm Projector

Griswald Film Splicer

Name and describe the function of the major parts and controls of the above media equipment.

Describe the environmental conditions required by each of the above media equipment.

INDIVIDUALIZED INSTRUCTION PACKAGE

entitled

MOTION PICTURE FILM AND FILM PRODUCTION

For

*Pre-service and in-service teachers or anyone interested
in learning about how instructional media may be utilized*

Rationale

This self-instructional package is designed to help you learn about the characteristics of motion picture film. The package will concentrate primarily on 16mm motion picture film and its application in classroom instruction. You will also study the motion picture projector and learn how and why it works. After completing this package, you will be able to successfully set-up and show a film in an instructional setting.

Content

The package focuses on the following ideas:

1. Motion picture film is available in three formats.
2. 16mm motion picture film is the most widely used type of film for instructional purposes.
3. Careful handling of film promotes film life.
4. All sound motion picture projectors have common parts and controls.
5. The classroom environment must be controlled for proper film viewing.

Objectives

At the end of this unit each student will be able to:

Distinguish among the various motion film formats (35mm, 16mm, and 8mm), and explain the major purpose of each type.

List and explain five suggestions for handling and maintaining film which will minimize film damage.

Describe the difference between magnetic and optical sound tracks as used with 16mm film.

List and describe the function of the major parts or components of any 16mm motion picture projector.

Explain why correct threading and proper loop size are important when showing a film.

State the proper procedure for handling film breakage during a film showing.

Describe the requirements of proper environmental control for film showings, including screen placement, projector placement, maximum viewing distance, and room lighting conditions.

List and describe the special advantages of motion film over other types of projected media.

Alternative Learning Activities

Instructions

Listed in the Learning Activities are several alternative methods of achieving the package objectives. A description of each activity, including a summary of the content, is provided for each alternative. It will be up to you to choose those activities which interest you. You should work with the material until you feel that you have achieved the package objectives. When you think you are ready, take the self-test and see how much you really do know. Good luck and have fun.

Alternative No. 1

Film Viewing Activity.....The information in this activity is presented primarily on two films. First view the 17-minute film titles FACTS ABOUT PROJECTION. This film is several years old; however, the information about projection is still pertinent. Pay particular attention to the animated segment describing the two parts of a motion picture projector - the picture section and the sound section. The last part of the film provides several hints for properly setting up a projector in a classroom. For more information on the different types of motion film, view the second film titled FACTS ABOUT FILM. This 12-minute film illustrates and compares all the forms of motion and still film. As a review, you may wish to look at the charts provided at the end of this package entitled CHARACTERISTICS OF 16MM FILM AND 16MM PROJECTION EQUIPMENT and THE MOTION PICTURE PROJECTOR.

Alternative No. 2

Programed Instruction and Reading Activity.....Start by taking the programed unit by George Yeaman entitled MOTION PICTURE PROJECTION. This unit, which will take you about 15-20 minutes, is a good introduction to film and film projection. Next study the charts provided in this package entitled CHARACTERISTICS OF 16MM FILM AND 16MM PROJECTION EQUIPMENT and THE MOTION PICTURE PROJECTOR. Finally, read pages 478-479 and 488-492 in the Brown, Lewis and Harclerod text. These two sections review projection equipment principles and generalized procedures for operating a 16mm projector.

Alternative No. 3

Reading Activity.....This activity is an in depth study of film and film utilization techniques. First, read pages 180-196 in the Brown, Lewis and Harclerod text. These pages include sections on the special value of films; film forms; locating, choosing and obtaining films; types of film action; and most importantly, uses of films in teaching. Next, read pages 478-479 and pages 488-492. These two sections cover projection equipment, principles and generalized procedures for operating a 16mm projector. You will probably want to refer to the charts provided at the end of this package, titled CHARACTERISTICS OF 16MM FILM AND 16MM FILM PROJECTION EQUIPMENT and THE MOTION PICTURE PROJECTOR.

Self-Test

The Self-Test is a set of questions that may be utilized strictly for your own benefit. As you are working with the alternative activities, try the Self-Test questions as a check to see how much of the information you have mastered. A Self-Test key follows the test so that you can check your answers.

1. The picture portion of a film is synchronized with the sound portion of a film when which of the following is exactly the size specified:
 - a. the upper and lower film loops.
 - b. the upper film loop.
 - c. the lower film loop.
 - d. the length of film around the sound drum.
2. Accessories that should be included with all classroom 16mm projectors are:
 - a. projection cart, AC extension cord, spare sound drum
 - b. projection cart, AC extension cord, take-up reel
 - c. projection cart, take-up reel, spare sound drum
 - d. AC extension cord, speaker extension cord, exciter lamp
3. The size of the image on the screen is related to the distance between
 - a. the film and the lens.
 - b. the projector and the screen.
 - c. the upper and lower film loops.
 - d. the film gate and the light source.
4. One element that can be omitted from any projector without disturbing its picture-projecting function is:
 - a. lens.
 - b. film channel.
 - c. elevation control.
 - d. light sources.
5. A film take-up reel should be as large or larger than:
 - a. the supply reel.
 - b. 1200 feet.
 - c. 7 inches.
 - d. the film leader.
6. Describe the difference between optical and magnetic sound tracks on 16mm sound film.
7. Describe the physical differences between 8mm and 16mm film, and between 16mm and 35mm motion film.

Self-Test Key

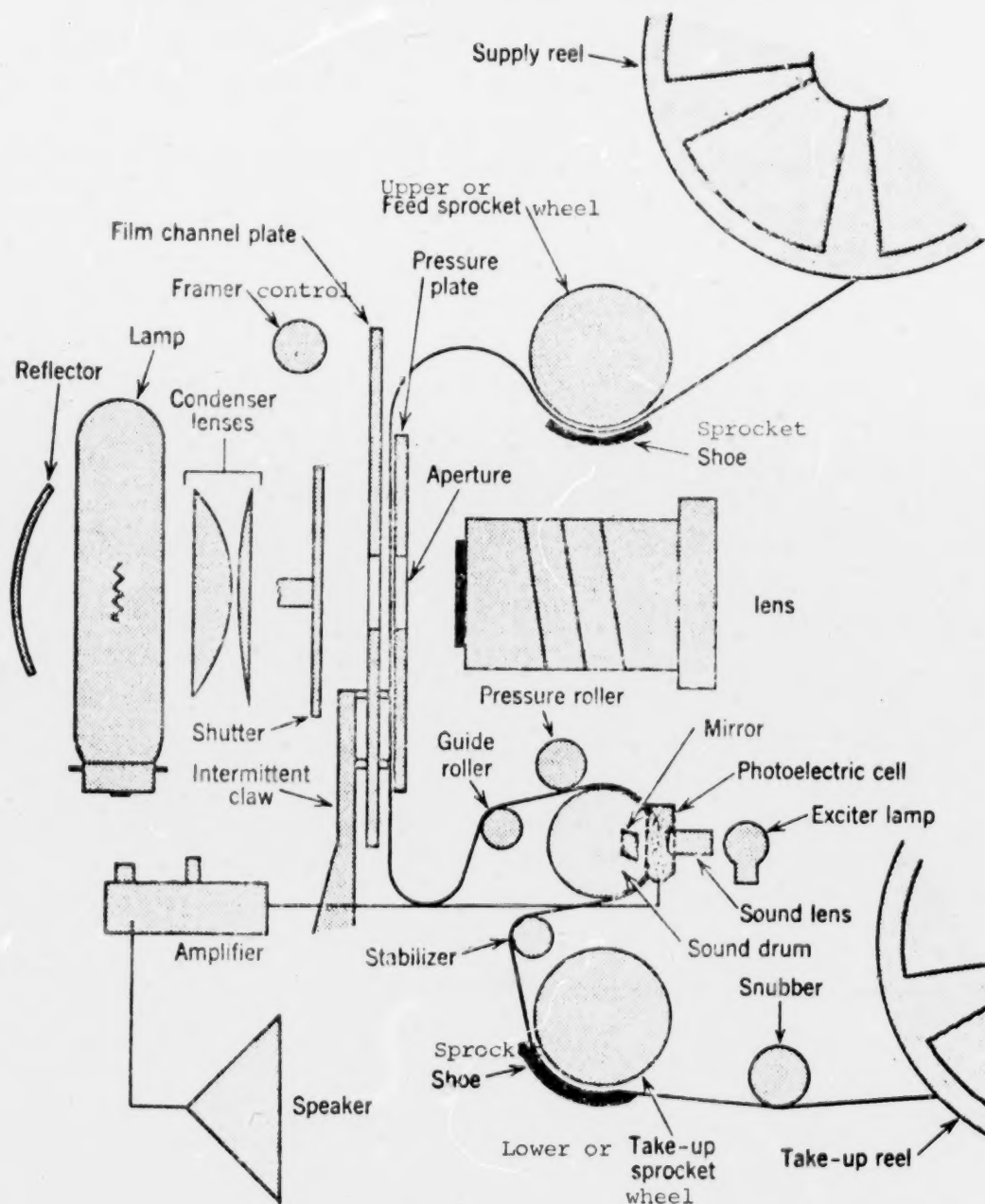
1. c
2. b
3. b
4. c
5. a
6. a) Optical - an actual photographic picture of the electronic sound signal placed on the film. Most films commercially available employ optical sound. Also, most school projectors are designed for optical sound.
b) Magnetic - a magnetic coating similar to the magnetic coating on audio recording tape. The magnetic system requires a projector with a built-in recording system. This system allows the user to record or rerecord a sound track as the film is being shown. Projectorists must be careful not to unintentionally erase magnetic sound tracks.
7. a) 8mm - a physically small film designed primarily for home and amateur photography. Used in education for individual and small group instruction. The film is physically too small to project large images for group viewing.
b) 16mm - a film twice the size of 8mm, designed primarily for group presentations. The most widely used film for school and institutional film viewing.
c. 35mm - a film more than twice the size of 16mm film (over four times the size of 8mm), designed for and used only in commercial theaters.

Quest

Below are some suggested activities that you may do after you have completed the package. These quest activities are optional and for those who would like to explore, in depth topics related to motion picture projection. If you have an idea you would like to pursue, see your instructor and he will help you to get started.

1. Try showing a film under various lighting conditions, then determine the best projector and screen location for each set-up. Make diagrams for each set-up and explain why you chose a particular set-up.
2. Make a comparative evaluation of three or four different projectors. Determine which type and model you think is best for classroom use. Explain why.
3. Make a chart illustrating all the different types of sound and silent films; 35mm, 16mm and 8mm.
4. Outline and justify any function or controls, not presently found on 16mm projectors, that you would like to have available.
5. Make a chart illustrating several types of film damage and suggest procedures for preventing specific types of damage.

THE MOTION-PICTURE PROJECTOR



Schematic diagram of essential parts of motion picture projector.

NOTE: THE LOWER LOOP MUST BE THE EXACT SIZE SPECIFIED ON THE PROJECTOR TO INSURE SOUND AND PICTURE SYNCHRONIZATION.

CHARACTERISTICS OF 16MM FILM AND 16MM PROJECTION EQUIPMENT

1. 16mm film and projection equipment is primarily designed for group viewing.
2. 16mm film can be classified as having both fixed sequence and fixed pacing.
3. Most 16mm films are sound films.
4. Sound films may have either an optical or magnetic sound track. However, most films employ the optical system. Special projectors, not normally available in schools, are required to show magnetic sound films.
5. Sound and silent films are projected at different rates. Sound film is projected at a rate of 24 frames per second and silent film is projected at a rate of 16 frames per second.
6. Most of the new projectors are available in models that automatically thread themselves.
7. 16mm film may be projected onto a rear screen unit and may utilize headphones for individual or small group viewing.
8. Film projection requires control over room lighting conditions. The projection area must be darkened for proper viewing.
9. 16mm films provide excellent clarity for audiences seated at least two image widths from the screen and no more than six image widths away from the screen.
10. A very large number of titles in all subject areas are commercially available on 16mm film.
11. Most 16mm films used in schools are obtained from district or university film libraries for a use period of one to three days.
12. Both 16mm films and 16mm projectors are relatively expensive. Films cost approximately \$50.00 to \$500.00 for commercially produced films.
13. Projectors cost approximately \$600.00 per projector.

INDIVIDUALIZED INSTRUCTION PACKAGE

entitled

FILMSTRIPS

For

**Pre-service and in-service teachers or anyone interested
in learning about how instructional media may be utilized**

Rationale

This is a self-instructional package designed to help you learn about the characteristics of filmstrips and ways to use filmstrips in your teaching. After completing this package, you will be able to effectively integrate filmstrips into both group and individualized instruction units.

Content

The package focuses on the following ideas:

1. Filmstrips are a very effective method of providing learners with visual information about objects and events.
2. Filmstrips are especially useful in instructional situations that require individualized pacing or active student participation.
3. Filmstrips are adaptable to either group or individualized instruction.
4. Filmstrips are an inexpensive and easily utilized visual media.

Objectives

At the end of this unit, each student will be able to:

Identify the distinguishing characteristics of filmstrips and explain several advantages of filmstrips over other types of projected media.

Explain the difference between sound and silent filmstrips and describe the various equipment that may be utilized for viewing both types.

Describe several different methods for utilizing the same filmstrip in a group instructional unit, and in conjunction with an Individualized Instruction Package.

Explain why filmstrips are becoming one of the most widely used media for individualized instruction.

Explain why filmstrips particularly lend themselves toward involving student participation.

Describe the various systems used to provide the narration for a sound filmstrip.

Alternative Learning Activities

Instructions

Listed in the Learning Activities are several alternative methods of achieving the package objectives. A description of each activity, including a summary of the content, is provided for each alternative. It will be up to you to choose those activities which interest you. You should work with the material until you feel that you have achieved the package objectives. When you think you are ready, take the self-test and see how much you really do know.

Alternative No.1

Filmstrip Viewing Activity.....View the 23-minute sound filmstrip titled THE SOUND FILMSTRIP - A KEY TO LEARNING. The first 26 frames describe generalized techniques for integrating media into instructional units. Starting with frame 27, the filmstrip suggests several reasons for using sound filmstrips and presents examples from commercially available filmstrips on various subjects. Starting with frame 47, suggestions are outlined for selecting, evaluating and utilizing filmstrips in both group and individualized instruction situations.

Then view the silent filmstrip titled USING FILMSTRIPS IN TEACHING. The first few frames of this silent filmstrip describe the filmstrip format and illustrate various types of filmstrip equipment. Part 1, starting with frame 18, explains several examples of using filmstrips in group instruction. Part 2, starting with frame 31, explains several examples of using filmstrips in individualized instruction. The last 8 frames demonstrate techniques for eliciting class participation.

Alternative No. 2

Read and Study Activity.....Read in the Brown, Lewis and Harclerod text pages 165-176. This section presents a comprehensive study concerning filmstrips, including choosing and locating filmstrips, group and individual teaching with filmstrips, and special filmstrip-showing techniques. Also included are tips for obtaining maximum effectiveness with filmstrips. You may want to jot down a few notes relating to selection procedures and methods for preparing learners to view filmstrips. Then study the one-page chart included in the package, entitled CHARACTERISTICS OF FILMSTRIPS AND FILMSTRIP PROJECTION EQUIPMENT.

Alternative No.3

Multimedia Viewing Activity.....Start by viewing the film CHILDREN LEARN FROM FILMSTRIPS. This film illustrates, using an actual classroom situation, several methods of integrating a filmstrip into instruction in ways which encourage class interaction and participation. The film also shows techniques for introducing a filmstrip, presenting the filmstrip and leading follow-up activities. Then look at the silent filmstrip entitled EARTH SATELLITE. This example filmstrip contains a complete teacher's guide printed on the first eleven frames, explaining how the filmstrip is organized and suggesting procedures for utilizing the filmstrip. Now, take the programed unit by George Yeamans entitled FILMSTRIP PROJECTION, Section V. This program, which will take about nine minutes to complete, is a good introduction to the characteristics of filmstrips and filmstrip projection equipment.

Self-Test

The Self-Test is a set of questions that may be utilized strictly for your own benefit. As you are working with the alternative activities, try the Self-Test questions as a check to see how much of the information you have mastered. A Self-Test key follows the test so that you can check your answers.

1. Filmstrips can be classified as having a
 - a. fixed sequence and fixed pace.
 - b. fixed sequence and flexible pace.
 - c. flexible sequence and flexible pace.
 - d. flexible sequence and fixed pace.
2. A sound filmstrip consists of
 - a. a filmstrip and optical sound.
 - b. a filmstrip and a record or cassette tape.
 - c. a filmstrip and a magnetic sound track.
 - d. 35mm film and direct audio playback.
3. Good filmstrip utilization is dependent on how effectively the filmstrip is
 - a. introduced.
 - b. integrated into the unit.
 - c. followed-up after the viewing.
 - d. all of the above.
4. Filmstrip viewing equipment designed for use in individual instruction carrels usually contains
 - a. front screen projection devices.
 - b. side screen projection devices.
 - c. rear screen projection devices.
 - d. b or c
5. Filmstrips are a high quality inexpensive media, but do not allow the projection of
 - a. animation.
 - b. overlays.
 - c. motion.
 - d. black and white.
6. Explain three different methods of presenting narration or captions that accompany a silent filmstrip.
7. What are several advantages of a sound filmstrip over a silent filmstrip?

Self-Test Key

1. b
2. b
3. d
4. c
5. c
6. Captions or narration
 - a. can be read by the teacher.
 - b. can be read by an individual student.
 - c. can be read by the entire class together.
 - d. can be written and presented by the teacher.
 - e. can be written and presented by the students.
7. Sound filmstrips
 - a. allow the student to concentrate on the visual information.
 - b. eliminate the necessity of reading.
 - c. provide the opportunity for combining narration, music and sound effects.
 - d. allow the teacher or learner to eliminate the accompanying narration and make up one of his own.

Quest

Here are some additional activities that you may do after you have completed the package. These quest activities will allow you to explore in depth some topics related to filmstrip utilization. If you have an idea you would like to pursue, see your instructor and he will help you get started.

1. Select a sound filmstrip or a silent filmstrip without captions on a topic with which you are familiar. Write your own narration. You may also want to record your narration on tape so that you will have your own personalized sound filmstrip.
2. Select, preview and evaluate several filmstrips in your subject field.
3. Develop a lesson plan for a large group unit or an individualized learning package. Incorporate two or more filmstrips into the unit. Remember that media, if it is to be effective, must contribute toward helping the learner achieve the unit objectives.
4. Prepare a written evaluation of the various types of filmstrip projectors and rear screen viewers. Suggest which devices would be most appropriate for different situations.
5. Design a chart to compare the characteristics of filmstrips (both sound and silent) with the characteristics of several other projected media.

CHARACTERISTICS OF FILMSTRIPS AND FILMSTRIP PROJECTION EQUIPMENT

1. Filmstrips are a series of individual visuals printed on 35mm film.
2. Filmstrips are compact, easily handled, and always in proper sequence.
3. Filmstrips can be classified as having flexible pacing but fixed sequence.
4. Filmstrips are useful for group or individualized study and can be projected at a rate controlled by the user.
5. Filmstrips are shown on classroom projectors for larger group presentations.
6. Filmstrips are shown in inexpensive rear screen viewers for small group or individual use.
7. Filmstrips are available in several formats:
 - a. visual only
 - b. visual with supplemental captions
 - c. visual only with accompanying narration on record or cassette tape

(When a filmstrip is accompanied by a tape or record, the flexibility is reduced due to the fixed pace of the recorded narration.)
8. Filmstrips shown in group situations require a screen and control of room lighting.
9. Filmstrips are easily and inexpensively duplicated when a large number of copies is required.
10. Filmstrips are commercially available on a wide variety of subjects and grade levels.
11. Filmstrips cost approximately \$4.00 to \$8.00 for commercially available silent filmstrips, or approximately \$5.00 to \$10.00 for commercially available sound filmstrips. Locally produced filmstrips cost approximately 30¢ per frame.
12. Filmstrips projectors cost approximately \$5.00 to \$50.00 for silent filmstrip viewers, approximately \$70.00 to \$150.00 for large group filmstrip projectors, and approximately \$100.00 to \$500.00 for sound filmstrip viewers and projectors.

INDIVIDUALIZED INSTRUCTION PACKAGE

entitled

INDIVIDUALIZED INSTRUCTION

For

*Pre-service and in-service teachers or anyone interested
in learning about how instructional media may be utilized*

Rationale

This self-instructional package is designed to help you learn about methods for individualizing instruction. The package will concentrate on the principles concerned with the transition from group to individualized instruction. After completing this package, you will be able to design an Individualized Instruction Package and evaluate existing individualized instruction programs.

Content

This package focuses on the following ideas:

1. Individualized instruction is the process of organizing instruction for the individual.
2. Individualized instruction provides a student with alternative methods of achieving stated objectives.
3. A large number of resources are required for an individualized instruction program.
4. New staffing functions are required in an individualized instruction program.

Objectives

At the end of this unit, each student will be able to:

Define and explain the following terms as they apply to individualized instruction packages:

rationale	alternative learning activities
description of content	optional quest or attitudinal activities
behavioral objectives	pre/self/post evaluation instruments
teachers' guide	

Explain the role and list the duties of an aide or paraprofessional in an individualized instruction environment.

List and describe the media materials and equipment primarily used for individualized instruction. Explain how these media differ from conventional classroom media utilization.

Justify the use of behavioral objectives and self-evaluation instruments as applied to individualized instruction packages.

Explain how properly designed individualized instruction packages allow for individual interests, learning rates, and ability levels.

Describe the role and responsibilities of the teacher in an individualized instruction environment.

Describe the environmental conditions necessary for implementing an effective individualized instruction program.

Alternative Learning Activities

Instructions

Listed in the Learning Activities are several alternative methods of achieving the package objectives. A description of each activity, including a summary of the content, is provided for each alternative. It will be up to you to choose those activities which interest you. You should work with the material until you feel that you have achieved the package objectives. When you think you are ready, take the self-test and see how much you really do know. Good luck and have fun.

Alternative No.1

Audio Cassette Listening and Film Viewing Activity....Listen to the cassette tape entitled INDIVIDUALIZED INSTRUCTION. This tape explains the basic requirements of a successful individualized instruction program and points out the difference between individualized instruction and conventional group instruction. (The tape will refer to the charts included in this package entitled TRANSITION TO INDIVIDUALIZED INSTRUCTION and INDIVIDUALIZED INSTRUCTION CASSETTE OUTLINE.) Next, view the film entitled RX FOR LEARNING. This film illustrates a typical day in the IPI individualized instruction program. Pay particular attention to the evaluation and record-keeping procedures utilized in the IPI program.

Alternative No. 2

Reading Articles Activity.....Read, in the Duane text which is a collection of articles dealing with individualized instruction, pages 7 to 23 and 87 to 96. These articles discuss individualized instruction, the role of the learning package and classroom strategies for success with packages. Next, read pages 169-177 which summarizes the elements of an individualized learning package. Skim pages 325 to 352 which review teachers' responses related to individualized instruction. Finally, evaluate the sample packages in Appendix III starting on page 367.

Alternative No.3

Text Book Reading Activity.....Read in the Wittich and Schuller book Chapter 14, pages 596-626. After stating the chapter objectives, the text goes on to discuss four individualized instruction variables, the nature and characteristics of individualized instruction, the differences between traditional instruction and individualized instruction, and the role of media in individualized instruction. This chapter presents an excellent overview of individualized instruction, including its advantages and disadvantages.

Self-Test

The Self-Test is a set of questions that may be utilized strictly for your own benefit. As you are working with the alternative activities, try the Self-Test questions as a check to see how much of the information you have mastered. A Self-Test key follows the test so that you can check your answers.

1. The role of the teacher in an individualized program is going away from that of:
 - a. diagnosing and prescribing.
 - b. presenting verbal content.
 - c. evaluating.
 - d. materials production.
2. Individualized instruction packages, to be truly individualized, should contain at least how many learning activities designed to achieve a specific objective:
 - a. 1
 - b. 2
 - c. 4
 - d. 5
3. What type of activities are included in individualized instruction packages to allow a specific learner to investigate a topic or concept in depth:
 - a. alternative learning activities.
 - b. learning experience.
 - c. quest or attitudinal activities.
 - d. independent activities.
4. Properly designed individualized instruction packages consider both individual differences in:
 - a. learning rates and speed.
 - b. learning rates and age.
 - c. learning rates and learning styles.
 - d. intelligence and learning styles.
5. Individualized Instruction Packages are usually designed to cover:
 - a. several months work.
 - b. a small number of concepts, skills or values.
 - c. an extra subject area.
 - d. any of the above.
6. Explain the duties of the paraprofessional in an individualized instruction environment.
7. What are three or four of the primary requirements of an individualized instruction program?

Self-Test Key

1. b
2. b
3. c
4. c
5. b
6. Paraprofessional duties include such nonprofessional duties as:
 - a. distributing materials and equipment.
 - b. correcting multiple choice tests.
 - c. supervising large group areas such as cafeterias, restrooms and playgrounds.
 - d. completing absentee and other related forms.
 - e. clerical and bookkeeping activities
7.
 - a. Diversified multimedia resources
 - b. Open access learning environment
 - c. Differentiated staffing of administrators, teachers and aides.
 - d. Organized individualized curriculum employing some form of learning packages.

Quest

Review the quest activities listed below, and see if there are any you would like to try. These quest activities are optional for those who would like to explore, in depth, areas related to individualized instruction. If you have an idea you would like to try, see your instructor and he will help you to get started.

1. Write one or more individualized instruction packages following the format presented in this package.
2. Visit a school employing an individualized instruction curriculum (such as Robert Frost Elementary School), and write a two to three page evaluation of their program.
3. Make a written analysis of the packages and procedures used in this course.
4. Read and evaluate two or three of the articles, not assigned in this package, in the Duane readings text.
5. Design several forms that could be utilized to keep track of student progress in an individualized instruction program.

TRANSITION TO INDIVIDUALIZED INSTRUCTION

ROLES

STUDENT AS RECEIVER.
TEACHER AS PRESENTER.
PRINCIPAL AS RULE MAKER AND
ENFORCER

CONTENT

(1) PRESENTED VERBALLY,
(2) TEXTBOOK DERIVED,
(3) ORGANIZED ACCORDING TO
STRUCTURE-OF-THE
DISCIPLINES APPROACH,
(4) CONTAINS IN-SCHOOL LEARN-
ING ACTIVITIES ONLY.

ENVIRONMENT

(1) SELF-CONTAINED CLASSROOMS
(2) GRADED CLASSES
(3) GROUP-PACED INSTRUCTION

TRADITIONAL

STUDENT AS

(1) INVESTIGATOR,
(2) SELF DIRECTED LEARNER,
(3) INFORMED HELPER TOWARD
ACHIEVEMENT OF PEERS,
(4) ENVIRONMENTAL ORGANIZER

TEACHER AS

(1) PLANNER AND EVALUATOR
(2) PRODUCER OF IIP'S
(3) COORDINATOR OF LEARNING
(4) MEMBER OF TEACHING
TEAMS

PRINCIPAL AS

(1) MANAGER OF BEHAVIORAL-
CONCEPTUAL CURRICULUM
(2) CREATOR OF SELECTIVE DISCON-
TENT WITH THE PRESENT PROGRAM
(3) STIMULATOR AND SECURER OF
STAFF AND STUDENT ATTEMPTS
TOWARD SOLUTIONS.
(4) MONITOR & HELPER TOWARD INSTI-
TUTIONALIZATION OF SOLUTIONS.

INDIVIDUALIZED

(1) INDIVIDUALLY INTERNALIZED,
(2) DERIVED FROM BEHAVIORAL-
CONCEPTUAL CURRICULUM,
(3) ORGANIZED TO PROVIDE STU-
DENT INQUIRY INTO THE ENVIR-
ONMENT,
(4) CONTAINS IN-SCHOOL AND REAL-
LIFE LEARNING EXPERIENCES.

(1) OPEN ACCESS LEARNING
AREAS
(2) NON-GRADED ACHIEVEMENT
(3) INDIVIDUALLY PACED
LEARNING
(4) INDIVIDUALLY SELECTED
LEARNING ACTIVITIES

INDIVIDUALIZED INSTRUCTION CASSETTE OUTLINE

Definition of Individualized Instruction

Providing the student with an appropriate set of learning materials which are designed to achieve specific objectives and which take into account individual differences in learning styles and learning rates.

Primary Requirements of an Individualized Program

1. Diversified Resources
2. Open Access Environment
3. Differentiated Staffing
4. Curriculum Reorganization

Generalized Individualized Instruction Package

1. Introduction or Rationale
2. Identification of Content
3. Specification of Behavioral Objectives
4. Identification of Alternative Learning Activities
5. Description of Optional Quest Activities
6. Pre, Self and Post-Evaluation Instruments
7. Teacher's Guide
 - a. Instructions to Teacher
 - b. Pre and Post Evaluation Keys
 - c. Bibliographic Listing of Required Resources

INDIVIDUALIZED INSTRUCTION PACKAGE

entitled

MEDIA UTILIZATION

For

*Pre-service and in-service teachers or anyone interested
in learning about how instructional media may be utilized*

Rationale

This self-instructional package is designed to help you learn how to effectively integrate media into an instructional unit. The package will concentrate on motion film and filmstrip utilization. However, the same utilization principles apply for all media. When you complete this package, you will be able to effectively incorporate a media segment into a group or individualized unit.

Content

This package will deal with the following ideas:

1. Effective media utilization depends on proper preparation and integration.
2. Any media may be utilized in several different ways depending on the instructional purpose.
3. The type of media utilized in a presentation depends on the objectives of the instructional unit.
4. Students may be prepared for media presentations in several ways.

Objectives

At the end of this unit, each student will be able to:

Suggest several purposes for using a film or other media as part of an instructional unit.

Suggest at least four different approaches or methods of utilizing a particular media in an instructional unit.

Explain and defend the importance of introducing media, developing class readiness, and leading follow-up activities.

List several methods of preparing a class to view and/or listen to media.

Describe the activities a teacher should complete before using media in the classroom.

Describe the conditions under which the various media formats may be most effectively utilized.

Explain why an instructor might want to use a multi-media presentation (i.e., a presentation using both motion film and slides.)

Explain how an instructor can prepare for using films or slides if a "teacher's guide" for the particular media is not available.

Alternative Learning Activities

Instructions

Listed in the Learning Activities are several alternative methods of achieving the package objectives. A description of each activity, including a summary of the content, is provided for each alternative. It will be up to you to choose those activities which interest you. You should work with the material until you feel that you have achieved the package objectives. When you think you are ready, take the self-test and see how much you really do know. Good luck and have fun.

Alternative No.1

Film Viewing Activity.....View two films FILM TACTICS and CHILDREN LEARN FROM FILMSTRIPS. FILM TACTICS is a 1945 Navy training film. Sound interesting? The age and format of the film provide a humorous way of analyzing utilization techniques. The film presents four segments illustrating improper utilization and one illustrating good utilization procedures. The second film, CHILDREN LEARN FROM FILMSTRIPS, takes place in a 6th grade classroom. Several suggestions are shown for utilizing filmstrips in a class, with emphasis being placed on the filmstrip as a class participation media. Refer to the UTILIZATION SUMMARY SHEET provided in the package as a review of this unit.

Alternative No. 2

Reading and Study Activity.....Read in the Brown, Lewis and Harcleroad text pages 22-31. This section describes techniques for utilizing media, including guidelines for media use, and procedures for preparing yourself and for preparing students. Also refer to the UTILIZATION SUMMARY SHEET provided in the package as a review of this unit.

Alternative No.3

Reading Activity.....For a more sophisticated approach to the psychological principles of media utilization, read and evaluate Chapter 2, LEARNING AND TEACHING WITH MEDIA, pages 44-76 in the Wittich and Schuller text. This chapter reviews six major psychological propositions or tenets related to media utilization.

Self-Test

The Self-Test is a set of questions that may be utilized strictly for your own benefit. As you are working with the alternative activities, try the Self-Test questions as a check to see how much of the information you have mastered. A Self-Test key follows the test so that you can check your answers.

1. Media is effective in the classroom only if:
 - a. it helps fulfill an instructional objective.
 - b. it is in color.
 - c. it is previewed before showing.
 - d. it has good sound and picture quality.
2. Instructional media includes which of the following:
 - a. print materials
 - b. nonprint materials
 - c. projected materials
 - d. recorded materials
 - e. all of the above
3. If a 25-minute film contains five minutes of information pertinent to the unit being studied, the teacher should:
 - a. explain to the class that most of the film is irrelevant to the topic.
 - b. show the five-minute segment only.
 - c. not use the film.
 - d. show the irrelevant segments with the sound turned off.
4. Teachers prepare students for viewing media in order that the student
 - a. knows what he is going to see.
 - b. knows why he is going to see it.
 - c. knows what he is expected to learn.
 - d. a and c
 - e. a, b and c
5. When may media presentations be shown for entertainment purposes?
 - a. on Friday afternoons
 - b. when introduced as such
 - c. when other media is not available
 - d. when team teaching
6. List several steps that you would follow in preparing to present a visualized media.
7. Describe the physical features of a room that must be considered before presenting media in a classroom

Self-Test Key

1. a
2. e
3. b
4. e
5. b
6. a. Prepare yourself by previewing the media.
b. Prepare the manner in which the media will be presented.
c. Prepare the students.
d. Prepare follow-up activities.
7. a. Room darkening
b. Room ventilation
c. Screen placement
d. Projector placement
e. Speaker placement

Quest

Review the quest activities listed below, and see if there are any you would like to try. These quest activities are optional for those who would like to explore, in depth, areas related to media utilization techniques. If you have an idea you would like to try, see your instructor and he will help you to get started.

1. View the film LET THEM LEARN. This film describes a school that was given a large film and filmstrip library along with a film and filmstrip projector for each classroom. Verbally analyze this project, and record your comments on an audio cassette.
2. Develop a rationale that supports or refutes the argument that different types of media require different types of teacher and student preparation.
3. Write a report comparing the techniques for utilizing media in group situations and in individualized situations.
4. Design a chart or bulletin board display illustrating several techniques for using specific types of media.
5. Put together a multi-media presentation in your subject area, which incorporates at least three different media.

MEDIA UTILIZATION SUMMARY SHEET

The four "P's" for proper utilization from the standpoint of the teacher:

1. PREPARE YOURSELF. Preview and evaluate the media so that you may effectively integrate that media into an instructional unit.
2. PREPARE THE PRESENTATION. Determine how the media may best be presented. Consider the presentation factors listed below.
 - a. Show all the way through
 - b. Show only excerpts
 - c. Show with recorded narration
 - d. Show without recorded narration
 - e. Pause at specified points
 - f. Repeat segments
 - g. Combine two or more media
3. PREPARE THE STUDENTS. Make sure your students know what they are going to see, why they are going to see it, and what they are expected to learn from the presentation.
4. PREPARE THE FOLLOW-UP ACTIVITIES. Plan in advance what you and the students are going to do after the presentation in terms of review, testing, projects and further study.

INDIVIDUALIZED INSTRUCTION PACKAGE

entitled

OVERHEAD AND OPAQUE PROJECTION

For

*Pre-service and in-service teachers or anyone interested
in learning about how instructional media may be utilized*

Rationale

This self-instructional package is designed to help you learn about overhead and opaque projection techniques. The package will emphasize the characteristics and uses of each projection system. After completing this package, you will be able to effectively utilize overhead transparencies and opaque materials in classroom instruction.

Content

This package focuses on the following ideas:

1. The overhead projector projects transparent images.
2. Overhead projection is primarily for large group instruction.
3. Overhead projection allows for direct manipulation of materials as they are being projected.
4. Overhead projection usually requires special materials production.
5. The opaque projector projects solid or opaque images.
6. Opaque projection does not require special materials production.

Objectives

At the end of this unit, each student will be able to:

Identify the advantages and characteristics of the overhead projector.

List several types of materials that can be used on an overhead projector.

Describe several procedures for progressively disclosing information on an overhead projector.

Explain the difference between transparent and opaque images as used on an overhead projector.

Define the term "keystoned image" and suggest procedures for eliminating this problem.

Describe the uses and advantages of multiple overlay overhead transparencies.

Describe the advantages and limitations of the opaque projector.

List several uses of the opaque projector.

Describe the types of materials that can be used on the opaque projector.

Alternative Learning Activities

Instructions

Listed in the Learning Activities are several alternative methods of achieving the package objectives. A description of each activity, including a summary of the content, is provided for each alternative. It will be up to you to choose those activities which interest you. You should work with the material until you feel that you have achieved the package objectives. When you think you are ready, take the self-test and see how much you really do know. Good luck and have fun.

Part I: Overhead Projection

Alternative No. 1

Filmstrip Viewing Activity.....View the two filmstrips entitled THE OVERHEAD PROJECTOR and TEACHING WITH THE OVERHEAD PROJECTOR. The first filmstrip describes and illustrates the basic principles of overhead projection and then goes on to illustrate several types of overhead transparencies. The second filmstrip provides several examples of ways in which transparencies may be utilized.

Alternative No. 2

Overhead Transparency Viewing Activity.....View the accompanying set of overhead transparencies while listening to the cassette recording entitled OVERHEAD PROJECTION. Notice the various and different types of transparencies, and notice the different methods which may be used to manipulate overhead presentations. Review page 479 in the Brown, Lewis and Harclerod text which illustrates procedures for preventing distorted or "keystoned" images. Next, study section III in the Yeaman's programed text entitled OVERHEAD PROJECTION. This programed unit reviews techniques for using an overhead projector.

Alternative No. 3

Reading Activity.....Read, in the Brown, Lewis and Harclerod text, pages 116-142. This chapter presents a good overview of overhead projection and utilization techniques. This chapter also illustrates several types of commercially available and locally produced transparencies. Also review page 479 which illustrates procedures for preventing distorted or "keystoned" images. Next, read Section III in the Yeaman's programed text entitled OVERHEAD PROJECTION.

Part II: Opaque Projection

Alternative No. 1

Slide-Tape Viewing Activity.....View the slide-tape program entitled OPAQUE PROJECTION. This is a short series which describes several uses and advantages of the opaque projector. Next read Section II in the Yeaman's programed text entitled OPAQUE PROJECTION. This section presents several ideas for using the opaque projector.

Alternative No. 2

Reading Activity.....Read, in the Wittich and Schuller text, pages 411-413. These pages introduce the opaque projector and suggest several uses of the opaque projector. Next, review pages 437, 439, 440 and 441 which explain and illustrate the operation of the opaque projector. Then read Section II in the Yeaman's programed text entitled OPAQUE PROJECTION. This section deals specifically with using the opaque projector.

Self-Test

The Self-Test is a set of questions that may be utilized strictly for your own benefit. As you are working with the alternative activities, try the Self-Test questions as a check to see how much of the information you have mastered. A Self-Test key follows the test so that you can check your answers.

1. Which one of the following statements does not apply to a modern opaque projector?
 - a. It is heavy and cumbersome.
 - b. It will project flat pictures.
 - c. It makes efficient use of light.
 - d. It projects materials up to 10 inches square.
2. Opaque projection requires what type of room lighting conditions?
 - a. Semi-lighted
 - b. Completely lighted
 - c. Completely darkened
 - d. a or b
3. Color can be added to transparencies by using which of the following materials?
 - a. Transparent tapes
 - b. Adhesive backed acetate
 - c. Special overhead projection felt-tipped pens
 - d. All of the above
4. Overhead transparencies are usually mounted for protection and convenient storage in
 - a. plastic packets
 - b. cardboard frames
 - c. card catalogs
 - d. cardboard containers
5. What is the most common type of transparency production method used in school systems today?
 - a. Photographic
 - b. Diazo
 - c. Thermal
 - d. Electrostatic
6. List at least four advantages of the overhead projector over other types of projection devices.
7. Explain several ways in which materials can be manipulated while being presented on an overhead projector.

Self-Test Key

1. c
2. c
3. d
4. b
5. c
6. a. Does not require control of room lighting
b. Allows the teacher to face the class
c. Allows the teacher to manipulate materials as they are being presented
d. Allows progressive disclosure of information
e. Allows enlargement for group viewing
7. a. Use of an opaque sheet to cover a portion of the transparency
b. Use of multiple overlays hinged in various formats
c. Use of grease pencil or felt tip pen to write on a transparency
d. Add external objects for emphasis

Quest

Review the quest activities listed below, and see if there are any you would like to try. These quest activities are optional for those who would like to explore, in depth, areas related to overhead and opaque projection. If you have an idea you would like to try, see your instructor and he will help you to get started.

1. After making the necessary master, produce several thermal transparencies for a group presentation. Also include a summary explaining how these transparencies would be utilized in a learning unit.
2. Mount several related pictures for use in an opaque projector. Explain how these pictures would be utilized.
3. Develop a list of suggestions for using the overhead projector in a specific subject area. Include a description of the type of transparencies that would be useful.
4. Suggest and justify several uses of the overhead projector in individualized instruction units or packages.
5. For a more indepth study on the use of flat (opaque) pictures, read and evaluate Chapter 3 in the Wittich and Schuller text or Chapter 6 in the Brown, Lewis and Harclerod text.

INDIVIDUALIZED INSTRUCTION PACKAGE

entitled

INSTRUCTIONAL MEDIA CENTERS

For

*Pre-service and in-service teachers or anyone interested
in learning about how instructional media may be utilized*

Rationale

This self-instructional package is designed to help you learn about the purposes and functions of Instructional Media Centers. The package will concentrate on the organization and make-up of a Center. After completing this package, you will be able to evaluate the effectiveness of existing centers and make appropriate suggestions concerning new centers.

Content

The package will discuss the following ideas:

1. IMC's should be available to students at all times.
2. IMC's contain both print and non-print resources.
3. IMC's require a staff of both professionals and paraprofessionals.
4. IMC's are most effective when services are centralized.
5. IMC's provide a variety of services to both students and teachers.

Objectives

At the end of this unit, each student will be able to:

List and describe the major functions and services of an IMC.

List the most common production activities and production equipment usually found in an IMC.

List several types of both print and nonprint media that may be available in an IMC.

List the projection and audio equipment that is usually available from an IMC.

Explain the rationale for merging traditional audiovisual functions and services with traditional library functions and services.

Describe the qualifications and responsibilities of personnel who function as IMC coordinators.

Describe the role and duties of a paraprofessional or aide in an IMC.

Alternative Learning Activities

Instructions

Listed in the Learning Activities are several alternative methods of achieving the package objectives. A description of each activity, including a summary of the content, is provided for each alternative. It will be up to you to choose those activities which interest you. You should work with the material until you feel that you have achieved the package objectives. When you think you are ready, take the self-test and see how much you really do know. Good luck and have fun.

Alternative No.1

Slide-Tape Viewing Activity.....View the slide-tape program INSTRUCTIONAL MEDIA CENTERS. This program presents an overview of the functions and services performed in an IMC. It also describes staff responsibilities and explains the trend toward the increasing use of microforms.

Alternative No.2

Article Reading Activity.....Start by reading the article by William C. Miller entitled ROLE AND FUNCTION OF THE INSTRUCTIONAL MATERIALS CENTER (included in this package). This article succinctly describes the purpose and function of a school IMC. Next read the two articles by Kenneth I. Taylor entitled INSTRUCTIONAL MATERIALS CENTER and HOW TO PLAN AND EQUIP AN INSTRUCTIONAL MATERIALS CENTER. Taylor presents, in a question and answer format, a brief overview of the operation of an IMC. Finally, read pages 414-419 in the Wittich and Schuller text. This short section describes present trends concerning the increasing use of microforms.

Self-Test

The Self-Test is a set of questions that may be utilized strictly for your own benefit. As you are working with the alternative activities, try the Self-Test questions as a check to see how much of the information you have mastered. A Self-Test key follows the test so that you can check your answers.

1. Films, filmstrips, slides and tape recordings are usually classified in an IMC as:
 - a. multi-media
 - b. print media
 - c. nonprint media
 - d. audiovisual aids
2. What is the most common unit of audio found in an IMC equipment pool?
 - a. Cassette recorders
 - b. Reel-to-reel recorders
 - c. Stereo recorders
 - d. Full track recorders
3. IMC's should be available to students:
 - a. during special periods.
 - b. during school.
 - c. before, during and after school.
 - d. after school only.
4. Paper copies of microfiche pages can be reproduced using:
 - a. a reader.
 - b. a reader enlarger.
 - c. a reader copier.
 - d. a paper enlarger.
5. Modern IMC's are combining traditional audiovisual services with traditional _____ services.
 - a. media
 - b. library
 - c. resources
 - d. production
6. What are the advantages of a centralized IMC in each school?
7. List several of the production activities that usually take place in an IMC.

Self-Test Key

1. c
2. a
3. c
4. c
5. b
6. A centralized IMC allows student access to all materials owned by a school, and allows this access at the proper teaching/learning moment. As schools become more individualized, and more media oriented, students must have materials available when and where they need them. An open access centralized environment is the most effective way to meet these needs.
7.
 - a. handout duplication
 - b. overhead transparency production
 - c. audio cassette production and duplication
 - d. copying services
 - e. slide and filmstrip production
 - f. chart, graph and poster production

Quest

Review the quest activities listed below, and see if there are any you would like to try. These quest activities are optional for those who would like to explore, in depth, areas related to Instructional Media Centers. If you have an idea you would like to try, see your instructor and he will help you get started.

1. Go to a public school IMC and evaluate that center in relation to the criteria discussed in this package.
2. Interview the director of a local public school IMC. Analyze what the center is doing today and what the director sees happening in the next ten years.
3. Interview a commercial media salesman in order to determine the type of media his company is emphasizing and not emphasizing.
4. Write a position paper describing the role of the IMC in a school. Include your own opinion and references from journal articles.

ROLE AND FUNCTION OF THE INSTRUCTIONAL MATERIALS CENTER

William C. Miller

An educator's life is never dull and our lives have been filled of late with more than the usual number of explosions. The population explosion has filled our classrooms, and the explosion of knowledge has filled our waking hours. There has also been an explosive-like revolution in teaching methods and in the amount of material created for instructional purposes.

Aiding teachers and students in dealing with the flood of knowledge, assisting them in using the wealth of instructional aids now available, and helping them to employ effectively the methods and "hardware" of the new teaching technology is the function of an *instructional materials center*. The concept of a unified service including both library and audio-visual materials is receiving rapid acceptance among educators. Whether it is called "materials center," "curriculum laboratory," or "learning resources library," its purpose is to help create a richer learning environment through providing appropriate learning materials, experiences and resources.

What is a materials center?

In materials centers all learning materials have equal status and receive consideration. The collection may contain the whole range of materials used in teaching. Printed matter such as books, pamphlets, periodicals—audio-visual material such as slides, filmstrips, recordings and the equipment needed to use them are equally available to teachers and students. Free and inexpensive materials, charts, clippings, globes and maps are also included, as are the less common but useful items such as models, specimens, dioramas.

Some centers have equipment which may seem unusual but which makes sense because of the school's instructional program. Production of simple school-made instructional materials using photographic equipment and lettering devices often takes place in the center. Some materials centers in elementary schools have a sewing machine for use in making costumes for dramatizations and others have simple woodworking tools. Art supplies beyond those which are kept in each classroom are often a part of the center's collection.

Ideas, too, are part of the center. Bulletin board materials and suggestions, exhibit and display ideas, scripts, field trip and community resources files, and all manner of things which will make instruction more effective are housed in the center. Professional books and periodicals as well as units of work and demonstration suggestions are also available.

The most important characteristic of an effective instructional materials center is its skilled staff. A mature, experienced, and creative professional person who enjoys helping teachers and students is the keystone of an effective program. Skill and knowledge in the total field of instructional materials are a necessity, as is a good understanding of child growth and development and principles of learning. Given adequate clerical help and funds, such a person can markedly influence teaching practices.

What a center contains and what services it offers depends on the type of school curriculum it serves. What is appropriate for one school may not be logical for a school of the same size in a nearby district. The purpose of a center is to improve instruction through service to teachers and pupils. Since each teacher, each building staff, and the needs of youngsters in each school are different, there should be variation in the program of service.

How is a materials center used?

Varied activities take place in a center. Teachers inquire about, order, preview or make the materials they need to do an effective teaching job. The materials specialist gives guidance in securing and using materials. Resource units and good ideas employed by other teachers are shared. Students ask for data for research purposes or for a practical project such as making a model. They secure information about resource people or field trips they might take. Administrators and curriculum people receive help in planning effective teachers' meetings or preparing booklets or posters for public relations purposes.

At times a total class will come with a teacher to learn about research tools or to use the center's other resources. Often individuals and small groups will be at work finding information by examining printed or audio-visual materials. Materials and equipment are also taken from the center for classroom use.

In general two major types of activity go on in the center: (a) reading, listening to, and viewing of materials by teachers and students individually and in small groups, (b) teacher and pupil preparation of teaching aids such as graphs, charts and slides.

In the materials center the specialist is concerned with acquiring, organizing, housing and distributing the whole range of possible learning resources so as to enrich the learning environment of the school. Servicing and repair of materials and equipment are also the specialist's responsibility.

What are the advantages?

In order to do the kind of teaching job expected by the community, a teacher must utilize a wide variety of materials and approaches. Administrators and curriculum people can help teachers by providing a climate which enables them to be creative and to bring to bear all possible resources for the solution of an instructional problem. It is in the classroom where the effect of the "explosions" is felt. Teachers have always been busy people but now, with the rapid increase in the numbers of children we must educate, an increasing emphasis on quality education, and the deluge of new knowledge and teaching materials, a comprehensive learning resources program is a necessity. It is more efficient and helpful for teachers to have one place to go for teaching materials rather than to visit separate library and audio-visual departments. The unified collection encourages better and more frequent use of the learning materials available.

It is widely recognized that each learner has a pattern and rhythm of growth which are unique. Providing the wide variety of learning experiences necessary to satisfy the different levels, abilities and interests is a challenge. A properly staffed and equipped materials center can have real impact on the problem of differing learning rates. Easy access by teachers and pupils to a wide variety of instructional materials and skilled guidance in the selection and use of these tools is necessary if we are to have the type of education required by today's demands.

We talk about teaching the whole child. We know that the most effective learning experience is a natural and integrated one. Yet many schools have an artificial division of materials. When audio-visual services are separate from those in which teachers and students secure printed materials, it is more difficult to have a unified approach to studying an educational need. For example, a chart which could make a valuable contribution is printed, but it cannot be shelved like a book. Since it is not printed material or primarily pictorial in nature the audio-visual person does not feel it is his responsibility. The same may be said of free and inexpensive materials, flat pictures, realia and many other types of learning aids. Because of an artificial division of materials the purposes of education may not be served. A "no man's land" of materials for which no one feels responsible is often created. This cannot happen when a school is served by a unified collection under the direction of a skilled materials specialist.

A building or system center?

Materials should, of course, be as close to the consumer — the pupil or the teacher — as is practically possible. It would be best to have all materials in the classroom immediately at hand. Certainly as many as possible of the commonly used tools for learning should be kept in the classroom. Many maps, globes, and reference books should be always available. Materials and equipment not likely

to be used continuously or on the spur of the moment, such as filmstrips, slides, and the necessary projection equipment, can be kept in the building instructional materials center. Other items, less often used and too expensive to be placed in each school, can be stored in a system or area materials center. Such items as motion pictures, cased exhibits, and expensive models could be shared among several schools from a central location. Regardless of location, proper records of all equipment and materials owned by the district will assure that any teacher in the school system can obtain a needed item wherever it is housed.

How can a center be established?

Enthusiastic and skillful teachers have always collected materials to vitalize instruction. Students who have such teachers are fortunate. Not all teachers, however, are so dedicated. Many find the demands of their assignments so great that they have little energy left to collect necessary resources.

Every school has the beginning of an instructional materials center, because every school and most teachers have some library books and audio-visual resources. Usually there is no policy or plan to facilitate the sharing and use of these learning aids. Even a few materials and resources centrally located and under the direction of a service-minded person can serve the instructional program better than the same amount of material when it is scattered and uncoordinated. Once the idea of sharing learning resources is accepted by a faculty, many steps can be taken without a great expenditure of funds. Compilation of a picture file or list of community resources can enrich greatly the learning environment at little cost. Some of the most comprehensive instructional materials programs now in existence started with such a simple pooling of materials and ideas.

One school system which had self-contained elementary classrooms wished to establish and staff a materials center. When the staff members found it was not financially possible to hire a person to do this, they were willing to have the number of children in their classrooms increased so as to free one of their skilled teachers to provide this service. Some formal and much on-the-job training prepared this teacher to implement the program they had envisioned. If the contribution of such a center can be understood, such services can be established even against great odds.

Most schools now have some separate and usually uncoordinated method of providing for audio-visual and library needs. Integrating these two services, while desirable, sometimes can be difficult because of the vested interests of individuals involved. Some librarians may be fearful of the rapidly growing audio-visual field. They may not feel comfortable with the new equipment and materials. In schools where the library is a teaching station or used to some degree as a study hall, it is difficult to take on a broader responsibility. Many audio-visual people do not wish to surrender their area of responsibility to librarians, nor do they wish to be under the librarian's direction.

As with all ideas which call for people to change their ways of working, skilled guidance and attention to the interpersonal aspects of the problem are necessary. Curriculum people have the responsibility and the skill to stimulate new methods of organizing curriculum resources to assist teachers and thus improve instruction. An amalgamation of library and audio-visual services, when approached with skill and understanding, is such a step.

INSTRUCTIONAL MATERIALS CENTER

Kenneth I. Taylor

The instructional materials center begins when traditionally regarded library and audio-visual departments are combined. From this union should come not only the sum of what previously was available in two separate areas of the school, but also distinctly *new* services that result from the centralization itself.

Current experiments in class size, in independent student research, and in more effective utilization of professional staff members already are providing implications concerning changes in the use of instructional materials. More audio-visual materials undoubtedly will be used, schools will create many of their own instructional materials, and students will need additional guidance in finding information. Centralization of materials and services into a single department may be the answer for most schools. Facilities that are designed around such services — but still adaptable to future changes — will be necessary.

Not only services and materials, but also instruction in the use of these materials should be provided by the instructional materials center. Of course, economic advantages result from centralization, but better services and more effective utilization of materials already owned by the school are necessary.

This article answers questions pertaining to the philosophy and organization of an instructional materials center.

Is there a trend today toward instructional materials centers in schools?

There is an accelerating trend at present. The philosophy is almost universal in library literature. The American Library Association in its new standards supports the centralization of all materials. Some colleges and universities are experimenting with materials centers for their students and faculties. Certain states, such as California and Florida, are showing major leadership in this direction.

What principles distinguish a school instructional materials "service" center?

Central administration of all instructional materials and services; professionally prepared catalogs to facilitate use; equipment and space to use all materials within the premises of the center; equal emphasis upon student and faculty guidance in the use of materials; direct contact of the entire staff with students and faculty.

Is an instructional materials center more than a combination of traditional library and A-V departments?

Yes. When well planned and effectively administered, the materials center offers kinds and quantities of services that cannot result from divided departments.

What are some of these additional services?

A staff of consultants familiar with the content of every type of instructional material owned by the school; organization of materials and records enabling all school personnel to recognize relationships among different types of materials; greater emphasis upon student use of traditionally regarded teacher materials for individual and group study; school-prepared guides that coordinate materials for more efficient use by students and teachers.

Are economic advantages gained?

There should be less duplication of professional and clerical duties, fewer examples of needless duplication when purchasing instructional materials, more efficient handling of rentals of outside materials, and a saving of student and faculty time when searching for materials.

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What types of instructional materials are found in a materials center?

All types that are valuable to a school. This includes books, periodicals, pamphlets, charts, posters, graphs, maps, models, portable bulletin boards, felt boards, globes, slides, filmstrips, motion pictures, phonograph records, and others.

Must all instructional materials be filed or shelved in the materials center?

No. Materials often used in departments may be kept on *permanent* loan in the departments. The location of these materials should, however, be indicated clearly in central records that are accessible to all school personnel. Short-term loans of materials to departments also should be made, the materials being returned after the departments no longer need them.

What is the difference between materials centers and libraries?

In many instances, libraries have indicated an exclusive interest in *printed* materials. If a library, however, assumes responsibility for all types of instructional materials, treats them in a uniform manner, and offers service in their use, there may be little difference. There is no magic in the name alone.

What is the difference between materials centers and audio-visual departments?

Usually the absence of printed materials in the audio-visual departments. One of the basic features of the materials center is the coordination of print with audio-visual materials.

Can separate library and audio-visual departments operate as effectively as a materials center?

No, not when consultants in instructional materials (library and audio-visual staff) are in different parts of the school and have no opportunity to become familiar with the content of all instructional materials either owned by the school or under consideration for purchase.

Are there different kinds of materials centers?

Yes, because there is lack of agreement in many instances on the definition of a materials center. Some schools report that they have materials centers in each classroom. They mean that they have classroom collections that contain many types of materials. Some cities, school districts, and counties have multi-school materials centers. Frequently these are no more than central *storage* centers that distribute and collect materials. They are not the same as the centers discussed in this article.

What is the primary difference in materials centers as discussed in educational circles?

Whether they are primarily "storage" or "service" materials centers. The objective of the first is largely economic. The second, while frequently realizing economic advantages is primarily educational.

When is a materials center primarily "educational" in its function?

When it centralizes and organizes materials to promote their more effective use, when it has facilities within its premises for student and faculty use of all materials, and when it has a staff that works with students and teachers.

Why should all consultants in instructional materials have a knowledge of all types of materials?

When the content of printed, graphic, projected and transmission materials is coordinated, better teaching and learning may result. If the consultants themselves cannot relate the content of all types of materials, the burden of correlation falls upon the teacher.

What is meant by "coordinating" instructional materials?

Learning all types of instructional materials together. It means learning what is available, determining when one type of material will be more effective than another, adapting materials for a particular classroom situation, and using them together, depending on the content of each.

What economic advantages result when the staff of the materials center knows the content of all types of materials?

Better selection and purchase of materials. There is less frequent purchase of one type of material on a particular subject, when there is sufficient information already available within the school in another form.

How can better selection result?

The advantages to a school might be weighed, for instance, concerning the purchase of a 300 page book, a 50 frame filmstrip, or a 10 minute motion picture on the same. Although a school might need all three, each type of material should be selected on the basis of how its particular form best presents the subject.

Can a more specific illustration be given?

Yes. If a school is considering the rental or purchase of a motion picture on a country such as Australia, for example, knowledge of what is already available within the school in magazines and reference books would assist in better selection. If one knows that the school already has much statistical information pertaining to agricultural, economic and industrial development, maps pertaining to natural resources, and still pictures that can be projected, a film that places major emphasis upon this information would not be selected. In its place, a film that stresses those aspects of Australia — such as regional dialects and aerial views of ports and terrain — that are best shown through sound and motion would then be selected for our instructional materials center.

What other advantages in service result in addition to better selection?

More attention to the needs of all school personnel. Libraries, by reason of their work in cataloging capacity, have emphasized service to students and study without the presence of the classroom teacher, and have given primary attention to print. Audio-visual staff members have tended to work as teacher-consultants, with little direct relation to students themselves.

What kind of personnel is needed in a materials center?

Consultants who are trained and experienced in using all types of materials. They should have a knowledge of the curriculum of the school, knowledge that comes only from experience within the school itself. They should know how to teach, and should understand the needs and interests of young people.

Isn't it difficult to find personnel trained in all areas of instructional materials?

Yes, just as it is difficult to find librarians and audio-visual personnel. What is needed, principally, are consultants who have a desire to continue to understand all types of materials and who wish to work with young people. The principles of selection, cataloging, utilization and guidance for all types of material have more points of similarity than difference.

Does this mean that consultants should not have specialized duties?

No. Staff members may have primary responsibilities for certain types of materials, but they should have or acquire a knowledge of other types, in addition. All staff members should work part of each day with students. They should know how to obtain materials of any type from outside sources. They should also be willing to explore methods by which materials may be prepared within the school by staff, teachers and students.

What major responsibilities should be given to consultants in instructional materials?

Responsibilities that are primarily consultative in nature. Clerical duties should be minimized and should be the responsibility of clerical workers. Whenever possible, repair and maintenance of equipment should be the responsibility of the maintenance department.

What responsibilities may be given student assistants?

Responsibilities with educational value. Their duties should be rotated. Instruction should be given them in the use of all types of equipment and materials. Their work in the materials center should follow a planned course of study, with credit given.

What instruction and assistance should be given classroom teachers?

Schools should train teachers in the use of equipment and materials owned by the school. They should be shown how to find materials with a minimum expenditure of time. They also should be taught when one type of material may be used to better advantage than another.

What instruction and assistance should be given the student body?

How to care for and use all materials effectively. Students should receive an initial introduction to the center by the staff. They should be taught by their teachers in classroom situations, and by the staff of the center when they are working alone.

What services are provided by the staff?

Direct services when staff members work with students and teachers. Indirect services when they provide guides by which school personnel can find materials alone.

What form do these prepared guides take?

Basic to any materials center is the professionally prepared card catalog. In this catalog, in an alphabetical arrangement, are indexed the materials owned by the school. In some schools, outside community resources are also indicated. The subject headings used in this catalog are based on a standard list so that all materials on one subject are found together.

Are other prepared guides available?

In many schools special lists (bibliographies) are provided. They may be lists of filmstrips or of phonograph records available. As these collections grow in size, however, the value of the lists decreases. They grow cumbersome and difficult to use, and the frequent revision needed is expensive. When this is the case, the staff often provides manuals on the use of the various types of materials instead.

Can a school use its existing facilities in order to develop a materials center?

Yes, in most cases. The program of a materials center is based, first of all, upon service. Physical facilities are important only to the degree that they improve the services provided to students and teachers.

What is the first consideration when developing a materials center in an established school?

Usually whether present facilities are large enough, or if expansion is necessary to provide for additional services.

How can present quarters be adapted to provide a materials center?

Some schools utilize adjacent classrooms or study halls. Study halls are frequently converted into reading room areas, and other areas in the school are then used for study halls. Centralized records frequently are developed to allow storage of materials in departments, thus expanding shelf space.

HOW TO PLAN AND EQUIP AN INSTRUCTIONAL MATERIALS CENTER

Kenneth I. Taylor

The textbook-centered school program of the past had many advantages from the administrative point of view. Every subject was self-contained, transition from one area of study to another was simple, and the number of units and amount of material to be taught had been predetermined by outsiders. The contemporary school, however, finds these artificial divisions of subject content frequently incompatible with the kind of instruction needed for a complex world. In any school where greater coordination is essential among departments, and where modification in student schedules, teaching assignments, class groupings, and facilities for individual student research is necessary, more attention must be given to the flexibility afforded by a large variety of instructional materials.

From an administrative position, it should seem that complete coordination of instructional materials will soon be necessary for any school. No longer can many schools afford to let departments build isolated libraries of duplicate materials to be used by themselves alone. Nor can they allow traditional library and audio-visual departments to operate independently without knowledge of what is contained in the collections of the other.

The centrally organized materials center seems to be the answer for the future school program. Based upon the premise that all types of instructional materials have more similarities than differences, the single department records, organizes and administers the materials and services related to their use for maximum efficiency.

The advantages of such a center are related more nearly to design and organization than to the size of the school. For this reason, the program can apply to small and large schools alike. The actual size of the department itself in each case must be based upon the enrollment, curriculum and services desired. It is difficult to see why any school, regardless of size, should not benefit from the economy that results from centralization, more efficient utilization of staff services, and reduced duplication of instructional materials.

* * *

Those who are planning a new school can, of course, design a materials center completely around the functions of the new department. An established school may, in many instances, be able to create a materials center with a minimum of physical change. Other schools, in which expansion of existing library and audio-visual departments is already necessary, may often take advantage of adjacent study halls or classroom areas. Underlying the concept of centralization in every case, however, is the objective of better service to students and their teachers.

What is the basis of any plan for an instructional materials center?

To design a departmental area in a school where all instructional materials (and services related to the use of these materials) are centralized. The purpose of the centralization is to help students and teachers locate all school-owned instructional materials and use them more effectively.

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Who should plan the services of a materials center?

Planning should be cooperative. The advice of all consultants in instructional materials, representative classroom teachers, and the administration should result in better definition of the services needed. Once defined for a new school, the services and functions desired should be explained to the school architect. Design should be based upon function.

What services should be considered when planning?

First of all, an estimate should be made of the reading room area needed for individual and class use, including the necessary space for book shelving. Then space traditionally allotted for audio-visual services, including one or more preview and recording rooms, should be considered. Third, a combined clerical and professional staff workroom area should be added; fourth, consider the storage space needed, and, next, classroom space for group training in research methods, if desired. Finally, a teachers' workroom and a construction materials room should be considered. This total will provide the initial estimate of area needed.

How large should a materials center be?

A definite figure for a school of any particular size is difficult to give. Size is related to variables, such as enrollment, community instructional resources, and the curriculum provided. When planning a materials center, however, a school should list the services it desires, then allot an estimated area for each service.

How much seating space has been recommended for reading rooms?

Ten to 15 per cent of the student body should be seated in the reading areas. Provision also should be made for class visits and for possible expansion to meet the demands of future methods of instruction and staff utilization.

How can class visits be encouraged through planning?

By designing reading areas which can accommodate an average class and yet allow seating for students from the study hall. If more than one class is likely to visit during the same period, a large reading room might be divided with movable counter-height shelving. It has frequently been recommended that no reading room seat more than 80 students. When greater seating capacity is needed, more than one reading room should be planned.

How much room should be provided per reader?

A good rule of thumb for the reading room is 30 to 35 square feet per reader. This allows room for traffic near entrances, the card catalog, and the charging desk. It enables classes to enter and leave during a period with a minimum of difficulty.

Why is a classroom frequently included in a materials center?

For large group instruction in research methods. It often doubles for faculty meetings and lectures. It should be about the same size as other classrooms.

How large should a preview and recording room be?

A room which may double for conference purposes should be approximately 10 feet wide and 12 to 15 feet long. Some schools make the room slightly larger, then divide it with a folding curtain. Experience indicates that only a minimum of darkening is needed for preview purposes. Absolute soundproofing is seldom needed unless the room is adjacent to a reading room. Soundproofing is needed whenever a group records through a mike, of course, but in small schools classrooms are frequently adequate.

How much space should be provided for other service areas?

Audio-visual space is dependent upon the degree to which equipment is centrally stored or located in departmental areas around the school. Clerical and professional staff workroom space should be large enough so that the staff members and several student assistants can work there at the same time. Storage space should be ample. Seldom does any amount of storage space prove to be too great. Provision should be made for at least five years of periodicals. Schools may wish to use this area for storing larger equipment. A construction materials room, with running water, should be large enough to allow two or three student committees to work at one time.

Should a teachers' workroom be provided?

Such a room may be a morale factor. Many materials on methods of teaching and child development are best shelved apart from student materials. A teachers' workroom may also double for faculty committee work. Seating capacity should be based upon the number of teachers who are free during any one period.

What materials should be provided for the teachers' workroom?

Books, periodicals and pamphlets representing the best of current thinking concerning education.

Where should a center be located in a school?

Near the main entry whenever possible, but in the academic area if a choice must be made. When adjacent to the study hall, student accessibility to the center is increased.

How can adaptations be made to meet future needs?

Provision should be made in the beginning for future expansion. Modular construction in new schools may be one answer. Future educational trends may very likely create a need for more reading room area, more facilities for class visits, increased audio-visual services, and possibly specially designed areas for individual student and teacher research. Great emphasis may be placed upon the preparation of charts, transparencies and displays by students and teachers alike.

When should planning for the materials center of a new school begin?

At least two years before the opening of the school. Materials should be purchased at the same time that physical facilities are designed. In this way, good collections can be made available when a school opens, not begun on opening day.

How can the present quarters in an established school be adapted to provide a materials center?

Some schools utilize adjacent classroom or study hall areas in order to expand existing facilities. The study halls are frequently converted into reading room areas, and other areas in the school are used instead for study halls. The central records that are established in a materials center can serve as a record of the location of many materials in various departments around the school. This has the effect of increasing the storage space available, while continuing to make all materials accessible to all school personnel.

What furniture is needed in a materials center?

Furniture should conform to generally accepted library specifications, particularly for pieces such as the card catalog and charging desks. Schools frequently use wood furniture and shelving in reading rooms for beauty and noise reduction. Steel office furniture and shelving can be used in office and storage areas. Steel blueprint cabinets are useful for storage of flat maps, charts and filmstrips.

What tables are used?

In the reading rooms, a variety of tables that seat four or six students (no more) is generally best. Students should never be seated at the ends of tables because crowding results. In work areas, light tables which can be easily moved are best. For all tables, plastic tops may prove more durable under student use.

Where should entrances be placed?

One entrance for students increases control of materials. A separate entrance to the work area allows convenient receipt of packages and routing of audio-visual equipment. Another entry to the teachers' workroom may encourage greater use. If possible, an entry from the study hall to the center may reduce corridor traffic.

How can design increase the effectiveness of supervision?

Windows between separate reading rooms and work areas assist in supervision. Room arrangement should allow control from as many points in the center as possible. Doors for reading room entries within the center itself may not be needed if good acoustical treatment has been included throughout.

Is outside window space essential?

Frequent emphasis by architects and planners on decorative window effects may prove to be a luxury that many schools cannot afford. If needed shelf space is sacrificed any advantages afforded by windows are minimized. Windows may actually add distractions to readers within.

Which instructional materials should be included in a materials center?

A school should begin with an ample collection of books, magazines, maps, and language, speech and drama phonograph records. Pamphlets, music records, and filmstrips, all of which can be procured upon short notice, should be added as needed, primarily upon faculty requests.

Must all instructional materials be filed or shelved in the materials center?

No. Many materials may be kept on permanent loan in the departments. The location of these items should be indicated in the central records of the materials center, thus making them available when needed to all school personnel.

How should film rentals be handled?

All rentals, including sponsored (free) films, should be requested, scheduled and distributed to departments and returned through the materials center for most efficient use.

What is the minimum professional staff needed in the small school?

In order to have all instructional materials and services in one department, it is difficult to see how even the smallest school can have fewer than one full-time and one half-time professional materials consultant. To have only one full-time consultant means scheduling a teacher to work with school personnel every hour of the day. To schedule the teacher for less time means that some students and teachers would not have professional assistance in research methods. The addition of one half-time professional consultant provides services every hour of the day, and allows one consultant to work several hours each day on professional ordering, cataloging and organization without interruption. The half-time teacher, half-time librarian cannot operate a materials center.

How large a clerical staff is needed for the small school?

A minimum of one half-time clerical worker reduces the amount of routine clerical work to be performed by professional consultants. The clerical worker should supervise student assistants in the performance of clerical tasks as well. A flexible schedule allows the clerical worker to work with all student assistants regularly.

How many student assistants are needed?

A minimum of two or three per hour in the smallest school is needed to shelve materials, answer routine questions, perform charging operations, and assist with the utilization of instructional materials in the classroom. Their duties should be rotated frequently. The number of assistants should correspond with the size of the professional staff available in the center. Many materials centers offer a course of study for their assistants and give school credit.

What is the one major factor to be considered when designing or remodeling a materials center?

All design and organization should be based upon student needs and should encourage student use of materials. The quality of service provided to students is always a measure of successful design.

INDIVIDUALIZED INSTRUCTION PACKAGE

entitled

INSTRUCTIONAL AUDIO

For

*Pre-service and in-service teachers or anyone interested
in learning about how instructional media may be utilized*

Rationale

This self-instructional package is designed to help you learn about the uses of audio recordings and equipment in instruction. Both the reel-to-reel and the cassette formats will be explained. Primary emphasis will be centered around the standardized cassette format. After completing this package, you will be able to successfully utilize audio materials in instructional applications.

Content

This package focuses on the following ideas:

1. Magnetic tape is an effective storage medium.
2. Magnetic tape and tape equipment is available in several formats.
3. The cassette format is becoming standardized for instructional purposes.
4. Tape recordings can be made from any audio source.
5. Magnetic tape may be used for a wide variety of instructional purposes.

Objectives

At the end of this unit, each student will be able to:

Identify and distinguish among the two most widely utilized formats of audio recording, reel-to-reel and cassette, in terms of tape size, type of tape container, tape speed and operational convenience.

List at least ten possible sources of audio information that can be recorded for classroom use.

explain the difference between single and multitrack recording and between mono and stereo recording.

Discuss the preferred methods of dubbing onto tape from records, tape, film, radio or television.

Discuss the factors and characteristics of the cassette system which is allowing this system to become dominant in instructional uses.

List at least ten possible uses of tape recordings in instructional situations.

Alternative Learning Activities

Instructions

Listed in the Learning Activities are several alternative methods of achieving the package objectives. A description of each activity, including a summary of the content, is provided for each alternative. It will be up to you to choose those activities which interest you. You should work with the material until you feel that you have achieved the package objectives. When you think you are ready, take the self-test and see how much you really do know. Good luck and have fun.

Alternative No.1

Slide-Tape Viewing and Listening Activity.....View the slide-tape presentation THE TAPE RECORDER IN THE CLASSROOM. This program is a comprehensive study of audio recording. The program is divided into four parts; a) Use of Tape Recordings, b) Principles of Magnetic Recording, c) Operating the Reel-to-Reel Recorder, and d) Operating the Cassette Recorder. If you are familiar with the operation of recorders, skip the last two sections. (You will be operating tape recorders in the Equipment Lab.)

Alternative No. 2

Reading Activity.....First read pages 318-348 in the Wittich and Schuller text. This section covers types of audio recorders, methods of making a recording and suggestions for classroom playback. Secondly, read pages 464-477 in the Brown, Lewis and Harclerod text which discusses in detail practices for making a good recording and for duplicating audio programs. As a review, study the charts included with this package entitled CHARACTERISTICS OF AUDIO TAPE RECORDING FORMATS and CHARACTERISTICS OF AUDIO RECORDING AND AUDIO RECORDING EQUIPMENT. (You will be operating tape recorders in the Equipment Lab.)

Self-Test

The Self-Test is a set of questions that may be utilized strictly for your own benefit. As you are working with the alternative activities, try the Self-Test questions as a check to see how much of the information you have mastered. A Self-Test key follows the test so that you can check your answers.

1. Reel-to-reel audio recordings may be recorded at which of the following speeds?
 - a. 7-1/2 ips, 3-1/2 ips, 1-7/8 ips
 - b. 7-1/2 ips, 3-3/4 ips, 1-7/8 ips
 - c. 7-3/4 ips, 3-1/2 ips, 1-7/8 ips
 - d. 7-3/4 ips, 3-3/4 ips, 1-7/8 ips
2. The present trend in classroom recordings is toward more use of:
 - a. thermoplastic recordings
 - b. disk recordings
 - c. cassette recordings
 - d. reel-to-reel recordings
3. Audio recordings can be made from which of the following sources:
 - a. video tapes
 - b. 16mm films
 - c. records
 - d. b and c only
 - e. a, b and c
4. A cassette recording which is labeled C-90 will play for how many minutes on each side:
 - a. 90
 - b. 45
 - c. 180
 - d. 30
5. A cassette is
 - a. a reel-to-reel device in a convenient package
 - b. a holder for 1/4 inch endless loop tape
 - c. easy to edit by splicing the tape
 - d. standardized at 3/75 ips
6. List several reasons for the present trend toward audio cassette use in education.
7. Explain why records are not a good storage medium for public school use.

Self-Test Key

1. b
2. c
3. e
4. b
5. a
6. The audio cassette is becoming the most widely used audio format in education since it is a light weight, inexpensive, self-threading, easy to use format that is standardized in terms of size, speed and recording configuration. Any cassette tape can be played on any cassette machine. There is complete interchangeability among machines.
7. Records are not a good storage medium for school use since the recording surface is exposed and susceptible to damage.

Quest

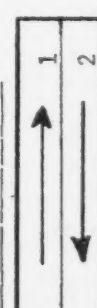
Review the quest activities listed below, and see if there are any you would like to try. These quest activities are optional for those who would like to explore, in depth, areas related to instructional audio applications. If you have an idea you would like to try, see your instructor and he will help you to get started.

1. Develop a lesson plan, for either a group unit or an individualized instruction package, that utilizes one or more cassette tapes.
2. Prepare a cassette tape, for a specific instructional unit, that contains several excerpts from a variety of audio sources.
3. Produce a cassette tape to accompany a slide or filmstrip presentation. State who the intended audience is and make sure it is on the proper level for that audience.
4. Evaluate several types of reel-to-reel and/or cassette recorders. List the advantages and disadvantages of each one.
5. Write to World of Tapes for Education, P. O. Box 15703, Dallas, Texas 75215, to request the loan of a sample tape program produced by a school group in a foreign country. Evaluate the tape and determine the value of tape exchanges. Discuss ways to motivate student involvement.
6. Read and evaluate Chapter 9 entitled AUDIO-CUED LEARNING in the Wittich and Schuller text. This chapter presents information related to the design and use of audio-cued individualized learning.

CHARACTERISTICS OF AUDIO TAPE RECORDING FORMATS

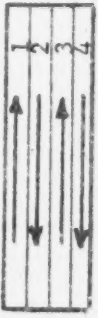
	REEL TO REEL FORMAT	CASSETTE FORMAT
Physical Appearance		
Definition	A single open reel on which tape is wound. The tape machine must be threaded and an external take-up reel is required.	A supply reel, containing tape, and a take-up reel sealed within a plastic housing. A cassette is a self-contained unit and therefore threading is eliminated.
Size of Container	Tape reel may be 1½", 3", 5" or 7" in diameter.	All cassettes are the same size. (Approximately 4" x 2½" x ½")
Width of Tape	Reel tape is ½" wide →	Cassette tape is 1/8" wide →
Record/Playback Speed	1-7/8 ips - used for voice 3-3/4 ips - used for voice and music 7-1/2 ips - used for music (ips = inches per second)	Standardized at 1-7/8 ips (ips=inches per second)
Number of Recording Tracks Available	2 track - called half track or dual track 4 track - called quarter or four track	2 track - called half track or dual track 4 track - called quarter or four track
Possible Modes	Mono, Stereo, and Quadraphonic	Mono and stereo. (Mono is most common for instructional uses.)
Primary Uses	Reel to reel format is used for high quality music recording and for producing original master tapes.	Cassette format is used for inexpensive and portable recording applications.
Length of Tape	Using the 1.5 mil thickness of tape, a 3" reel holds 300 feet of tape a 5" reel holds 600 feet of tape a 7" reel holds 1200 feet of tape.	Specified in terms of minutes (See Record/Play Time)

Audio

REEL TO REEL FORMAT	CASSETTE FORMAT
Time depends on tape width, tape speed and reel size. For example: 1.5 mil tape at 1-7/8 ips, on a 5" reel = 1 hr. per side 1.5 mil tape at 1-7/8 ips, on a 7" reel = 2 hr. per side 1.5 mil tape at 3-3/4 ips, on a 5" reel = 30 min. per side 1.5 mil tape at 3-3/4 ips, on a 7" reel = 1 hr. per side 1.5 mil tape at 7-1/2 ips, on a 5" reel = 15 min. per side 1.5 mil tape at 7-1/2 ips, on a 7" reel = 30 min. per side (Note: 1.5 mil thickness is common for school use. Reel tape is also available in thicknesses of 1.0 mil, .75 mil and .50 mil. The thinner the tape, the more likely it will stretch or break. (Mil = 1/1000 inch.)	Time is determined by cassette model. Model C-15 - 7½ min. per side - 15 min. total Model C-30 - 15 min. per side -- 30 min. total Model C-60 - 30 min. per side -- 60 min. total Model C-90 - 45 min. per side -- 90 min. total Model C-120-60 min. per side - 120 min. total Note: Cassettes can be used repeatedly, but if you record and break the back recording pins, you can only <u>play</u> repeatedly. You can not <u>record</u> again.
Half or Dual Track MONO  Records on upper half (1) of tape only. After the upper half is recorded, the cassette can be turned over in order to record on the bottom half (2) of the tape. Quarter Track STEREO  Records on upper two fourths (1a and 1b) simultaneously. Cassette can be turned over in order to record on the bottom two fourths (2a and 2b) simultaneously. The recording arrangement allows stereo tapes to be played on mono machines.	Half or Dual Track MONO  Records on upper half (1) of tape only. After the upper half is recorded, the reel can be turned over in order to record on the bottom half (2) of the tape. Half or Dual Track STEREO  Records on both upper half (1a) and lower half (1b) of tape simultaneously. (Tape cannot be turned over.)

Record/Play Time

Record/Playback Track Arrangements

REEL TO REEL FORMAT	CASSETTE FORMAT
<u>Quarter or Four Track MONO</u>  Records on upper fourth (1) of tape only. Then on below middle fourth (3) only. Reel can be turned over in order to record on the above middle fourth (2) only and the bottom fourth (4) only. <u>Quarter Track STEREO</u>  Records on upper fourth (1a) and below middle fourth (1b) simultaneously. Reel can then be turned over in order to record on the above middle fourth (2a) and the bottom fourth (2b) simultaneously. <u>Four Track QUADRAFONIC</u>  Records on all four fourths (1a), (1b), (1c), (1d), simultaneously. (Reel cannot be turned over.)	

CHARACTERISTICS OF AUDIO RECORDINGS AND AUDIO RECORDING EQUIPMENT

1. Tape recording equipment is readily available, inexpensive, portable and simple to operate.
2. Tape recordings can be classified as having fixed sequence and fixed pacing.
3. Tape recorders provide playback of commercially available prerecorded tapes or locally produced tapes.
4. Tape recordings are readily adaptable to either individualized instruction or large group instruction.
5. Cassette recorders are becoming the most widely used format since they are standardized in terms of tape size and speed, are lightweight, are battery or A.C. operated, and are self-threading.
6. Tape recorders are easily adapted to individualized listening by using headphones.
7. Tape recordings provide high quality reproduction even after being played a large number of times.
8. Tape recordings can be easily made from records, other tapes, film sound tracks, or television program sound tracks.
9. Tape can be erased and reused several times.
10. Multiple tape copies are easily made by connecting two or more tape recorders together.
11. Tape cost - approximately \$1.00 to \$3.00 for blank cassette tape and approximately \$2.00 to \$10.00 for pre-recorded cassette tapes.
12. Tape recorder costs - cassette recorders approximately \$20.00 to \$120.00; reel-to-reel recorders, approximately \$125.00 to \$300.00.

INDIVIDUALIZED INSTRUCTION PACKAGE

entitled

INSTRUCTIONAL TELEVISION

For

*Pre-service and in-service teachers or anyone interested
in learning about how instructional media may be utilized*

Rationale

This self-instructional package is designed to help you learn about the present trends concerning instructional television utilization and instructional television equipment. Emphasis will be placed on using television as a means to more effectively utilize other means, and as a means of producing media. After completing the package, you will be able to more effectively integrate video taped resource materials into instructional units.

Content

This package focuses on the following ideas:

1. Video tape is an effective visual/audio storage medium.
2. Successful use of TV equipment requires teacher or student control over the presentation.
3. Instructional television equipment is standardizing on the cassette format.
4. Video tape allows immediate recording, duplication, playback and erasure of programing.
5. Microteaching can effectively improve teaching techniques.
6. Video tape provides for recording and later playback of broadcast TV programs, other video tapes and 16mm films.

Objectives

At the end of this unit, each student will be able to:

Describe several significant attributes and uses of instructional television.

Explain the conditions which allow television to be effectively utilized in the classroom.

Explain the rationale and potential uses of television for instant evaluation and micro-teaching applications.

List and describe several guidelines for integrating video-taped programs into instructional units.

Describe the present trend concerning instructional television equipment and facilities for education.

List several sources from which video tapes may be recorded.

Alternative Learning Activities

Instructions

Listed in the Learning Activities are several alternative methods of achieving the package objectives. A description of each activity, including a summary of the content, is provided for each alternative. It will be up to you to choose those activities which interest you. You should work with the material until you feel that you have achieved the package objectives. When you think you are ready, take the self-test and see how much you really do know. Good luck and have fun.

Alternative No.1

Video Tape Viewing and Audio Cassette Listening Activity.....

Listen to the audio cassette tape entitled TRENDS IN INSTRUCTIONAL TELEVISION. This tape describes the trends toward using two types of television equipment, "Piggy-back" video cassette units and "Instant Evaluation" portable recording equipment. Next watch the video cassette entitled SONY VIDEO CASSETTE: TOTAL VIDEO SYSTEM. This tape from Sony Corporation illustrates the new video cassette system of which Sony is one of the manufacturers. Finally, watch the video cassette entitled TV TECHNIQUES FOR TEACHERS. This program presents several good suggestions for utilizing television in the classroom. Notice how television is integrated with other media to produce the most effective teaching strategy.

Alternative No.2

Reading activity-----Read the paper LET'S PIGGYBACK AND FORGET COMPLEXITY, included with this package. This paper describes the present trends in instructional television utilization. Then read pages 238-247 in the Brown, Lewis and Harclerod text. This illustrates a variety of ways television may be used in instruction. After reading, review the chart entitled CHARACTERISTICS OF VIDEO TAPE AND VIDEO TAPE RECORDING EQUIPMENT.

Self-Test

The Self-Test is a set of questions that may be utilized strictly for your own benefit. As you are working with the alternative activities, try the Self-Test questions as a check to see how much of the information you have mastered. A Self-Test key follows the test so that you can check your answers.

1. Bulky, expensive video tape recorders are being replaced, for classroom and self-instructional use, by:
 - a. film recorders.
 - b. magnetic video recorders.
 - c. video cassette recorders.
 - d. electron beam recorders.
2. Television provides a method of easily duplicating:
 - a. video tapes.
 - b. films
 - c. broadcast TV programs.
 - d. a and c
 - e. a, b and c
3. Classroom "piggyback" cassette units may be used
 - a. in wired classrooms.
 - b. in the television studio.
 - c. in any room with an A.C. outlet.
 - d. in broadcast situations.
4. What is the primary hindrance to using broadcast television programs in the classroom?
 - a. Lack of A.C. outlets.
 - b. Lack of wired building distribution facilities.
 - c. Lack of teacher control over broadcast time.
 - d. Lack of finances.
5. Video back-pack recorders are available which are designed to be operated by:
 - a. a small number of technicians.
 - b. several students.
 - c. a single student or teacher.
 - d. a school media person.
6. What is the advantage of a video tape over that of a film?
7. Outline the television equipment needed in the classroom when using a "Piggyback" system.

Self-Test Key

1. c
2. e
3. c
4. c
5. c
6. The primary advantage of video tape is that it allows immediate and local recording of off-the-air TV programs, other tapes, 16mm films, and live productions. In addition to the ability of on-the-spot recording, video tape may be erased and reused. Obsolete programming can be erased thus allowing a school to maintain an up-to-date tape library at all times.
7. A "piggyback" system consists of
 1. a video recorder
 2. a color TV set
 3. a car to hold the recorder and TV set

Quest

Below are some suggested activities that you may do after you have completed the package. These quest activities are optional and for those who would like to explore, in depth, topics related to instructional television applications. If you have an idea you would like to pursue, see your instructor and he will help you get started.

1. Arrange to video tape a microteaching unit. Evaluate the results and repeat the taping in order to try and improve your teaching methodology.
2. Make a listing of the programs on both commercial and educational television that may be useful in your subject area for classroom use. Make an annotation of each program for future reference.
3. Describe several ways television may be effectively utilized in your subject area. Provide specific examples and justify each use.
4. Arrange to observe the classroom reception and use of an instructional television program. Evaluate the viewing in terms of previewing activities, physical classroom arrangements and follow-up activities.
5. Preview and evaluate one or more videotapes of instructional television programs typical of those used for instructional purposes today.

CHARACTERISTICS OF VIDEO TAPE AND VIDEO TAPE RECORDING EQUIPMENT

1. Video tape equipment allows for the recording and immediate playback of locally produce programing and for delayed playback of commercially available programing.
2. Video tape recordings can be classified as having both fixed sequence and fixed pacing.
3. Video tape equipment is available in portable battery operated units.
4. Video tape equipment provides a system for recording and storing all forms of live and recorded audiovisual information.
5. Video tape recorders can provide distribution of a program to various locations simultaneously.
6. Cassette video tape units are now available which are standardized in terms of tape size and speed and are self-threading.
7. Video tape equipment produces a poorer quality image than film projection equipment.
8. Video tape equipment allows for the duplication and reproduction of broadcast television programs, 16mm films and other video tapes.
9. An increasing number of commercial video taped programs are becoming available.
10. Video tape recorders require a television set to play recorded programs.
11. Video tapes can be erased and reused several times.
12. Video tape cost - approximately \$20.00 to \$40.00 for a blank 30-minute tape.
13. Video tape recorder cost - approximately \$800.00 to \$4,000.00 for reel-to-reel video tape recorders and approximately \$700.00 to \$1,400.00 for cassette recorders.

LET'S PIGGYBACK AND FORGET COMPLEXITY

by James E. Duane

Television has many useful applications in instruction, but unfortunately the complexities of the medium have tended to cause more frustration than instructional effectiveness. Television first emerged in education as a panacea to compensate for the shortage of qualified instructors and to provide quality instruction to large groups. Many universities and public school systems, with the help of the federal government, poured millions of dollars into television production studios and distribution facilities. The equipment was installed and instructors were expected to take full advantage of television's potential. What happened? The facilities were there, but educators were completely unaware of the tremendous complexities of television production. Professional production staffs were seldom employed and instructors were inadequately trained in the use of the television medium. The result, a preponderance of talking faces emerged in classrooms. Television was used primarily to distribute a lecture from one place to another. Students and instructors were dissatisfied, technical problems were numerous, and the entire process was fantastically expensive.

Today, most schools have written off their production studios and forgotten they ever existed. Should instructional television be forgotten also? No, now that television as a cure-all has quietly died, we can concentrate on using television as an instructional resource in the classroom. Instead of trying to produce everything from scratch, we should take advantage of what already exists. With the nation covered by educational television stations, and with the distribution network provided by the Public Broadcast Service (PBS), a tremendous volume of excellent programming is being broadcast. This excellent programming is being produced by the larger ETV stations and specialized production centers which have the financial resources and professional expertise required to produce quality instructional materials.

How can the schools take advantage of this rich source of instructional materials? First of all, schools should work closely with their local ETV station. Many programs are distributed to ETV stations by the FBS network while other instructional programs are available on a rental basis from one of several national video tape libraries. These rental video tapes are primarily in broadcast format and therefore must be shown through the facilities of an ETV station. Schools should coordinate their efforts in working with their local ETV station so that a balanced variety of programming is broadcast which will be useful to all the schools in a given area.

Even with some cooperative effort, problems still exist. A station must be present at a specified time and must assume that individual classes are ready for the viewing. Programs are often broadcast when they can be efficiently integrated into classroom activities. The solution to this problem is to tape record programs as they are broadcast and then make them available for playback when they can be efficiently and conveniently utilized. In obtaining the necessary video recording equipment, some stations, at an instructor's request, may agree to broadcast on either educational or commercial television. The off-the-air video taping is a simple and responsive method of bringing broadcast programs into the classroom, however, it does present problems in terms of copyright laws.

Since the copyright problem is a prevailing issue it is worthwhile to examine its present status. The copyright laws basically state that no copyrighted materials may be copied and reused without the written permission of the original producer. The law is particularly important in those areas where sizable monetary gains are involved. However, since taping materials for in-school instructional use does not involve monetary gain, many educators believe that in-school use of copyrighted materials should be permitted. Unfortunately, (or fortunate, as the case may be) neither the Federal nor the judicial decisions are completely clear on the right to record and reuse materials. The whole area of the utilization of recorded materials is very nebulous and will have copyright revisions in order to clarify exactly what can and what cannot be recorded and reused for noncommercial purposes. We do have some favorable rulings according to such sources as Siebert¹ and Gordon.² Siebert and Gordon indicate that it seems clear that a recording of copyrighted material can be made for delayed broadcast on a one-time basis. This means that any TV program may be locally recorded as it is broadcast and later played

back when it is convenient. Nothing appears to be specifically stated indicating whether or not a recorded program may be retained and reused after the initial delayed showing. Siebert states in his book entitled Copyrights, Clearances, and Rights of Teachers in the New Educational Media:

In summary, until the copyright statute is amended or until the courts make a clear-cut decision, it is submitted that educational not-for-profit programs may be recorded and that noncommercial re-use of these recordings and transcriptions is permissible.³

Once a program has been recorded and we are free to use it, at least on a one-time basis, there must be an efficient method of showing that program in the classroom. The type of playback facility recommended specifically for this purpose is called a Piggyback Unit. A Piggyback Unit is simply a cart containing a color TV set and a video tape playback machine. After a tape is recorded, it can be placed on a Piggyback Unit and wheeled into the instructor's classroom when it is convenient for the instructor. The instructor now has complete control over the program presentation; he can start the program when he is ready, stop to answer questions, back up and even repeat sections. This system provides the instructor with the same control over a television program that he has over an audio tape or a 16mm film. If copyright and reuse problems are eliminated the program could be retained after the initial showing and used again for similar presentations, used as a resource, or used as make-up material for students who were absent during the initial viewing. The most important aspect of the Piggyback system is that the instructor can bring full color television programming into the classroom while still maintaining complete control over its presentation. By using Piggyback Units, two or three units may serve an entire school. Equipment is distributed only when requested. For large group viewing several units can be wheeled into one area and interconnected. Piggyback Units can be wheeled into and utilized in any instructional area in the school, all that is needed is an AC outlet. The traditional (and seldom used) room to room wiring, with TV sets in each classroom, is eliminated. No longer does a program have to be broadcast or distributed from a central source while everybody hopes that it will reach the appropriate classroom. The Piggyback system also minimizes the number of technical personnel required to operate and to maintain a school's television facility. One full-time technician, with student help is usually adequate for most schools.

The Piggyback system, like any other technological innovation, does cost money. However, a large initial financial outlay is not required. A school may phase in equipment in accordance with user demand and budget constraints. An off-the-air taping facility in the new 3/4" video cassette format can be purchased for less than \$1600. (Although the copyright problems have not been resolved, the leading manufacturer of 3/4" cassette recorders includes a built-in tuner for recording directly off-the-air on all their cassette recording units. This may be a subtle hint to the educators.) For those who prefer the more established reel to reel recording format, 1" video recorders are available starting at less than \$3000. Either the 3/4" cassette format or the 1" reel format is recommended for Piggyback systems in order to help insure high quality color reproduction. Less expensive 1/4" and 1/2" recording systems are available, but, in accordance with their cost reduction, provide lower quality and less stable reproduction. Quality reproduction is essential for effective television utilization in the classroom or learning center.

The utility of the Piggyback system may be expanded as funds become available. By adding a film-to-tape recording unit and by securing the necessary copyright clearances, the problems encountered in obtaining and utilizing instructional films can be reduced. If a school has only one copy of a film and three instructors request that film on the same day, two video tape copies could be made and sent to two of the instructors while the original film is sent to the third instructor.

Once again, the copyright problem comes into the picture. The video taping of copyrighted commercial films, without permission, is generally interpreted as a direct copyright violation. Therefore, it is recommended that schools secure permission for copying filmed materials. Permission for copying filmed materials varies with the situation. Many film producers will give blanket copying permission to schools which have purchased the original film. Some producers forbid copying their materials under any circumstances. Other producers require an arbitrary single payment or annual fee for exclusive rights to copy and reuse their productions. Any standardization of these or other policies will not come about until our obsolete copyright laws have been amended.

Let's forget complexity and take time to analyze the most efficient method of making instructional materials available. The Piggyback system provides maximum flexibility while retaining instructor control. This system also provides a method of utilizing the vast resource of instructional television program material that already exists and that will become more abundant in the future.

The potential is there barring only copyright problems, equipment is available, and programs are waiting. It's now up to us as educators to push for copyright reform in order to take advantage of television and utilize it as an effective instructional resource.

¹ Siebert, Fred S. Copyrights, Clearances, and Rights of Teachers in the New Educational Media, A report produced under a grant from the American Council on Education, Washington, D. C., 1963, p. 33.

² Gordon, George N. Classroom Television: New Frontiers in ITV, New York: Hastings House, Publishers, 1970, p. 150

³ Siebert, op. cit. p. 34

INDIVIDUALIZED INSTRUCTION PACKAGE

entitled

SELECTION AND EVALUATION

For

*Pre-service and in-service teachers or anyone interested
in learning about how instructional media may be utilized*

Rationale

This self-instructional package is designed to help you learn how to select and evaluate all forms of media for use in individualized or group instructional units. The package will emphasize the selection of media that will effectively enhance direct classroom instruction. After completing this package, you will know where to find media, how to select media and how to evaluate media in relation to specific instructional objectives.

Content

This package will focus on the following ideas:

1. An extremely large number of media are commercially available.
2. Media must be evaluated in terms of specific instructional needs.
3. Media "evaluation" forms are an effective way of storing information about media.
4. Certain types of evaluation forms are more effective than others.
5. Most media can be used to fulfill more than one purpose or objective.

Objectives

At the end of this unit, each student will be able to:

List at least five bibliographic sources of media.

List and define the five major headings of a generalized media evaluation form.

Describe the advantages of the EFLA type form over other types of media evaluation forms.

Explain the rationale for suggesting more than one purpose or objective for each media.

Suggest reasons which limit the objectiveness of a media evaluation.

Evaluate several media using the evaluation form presented in the package.

List several disadvantages of the "check list" type evaluation forms.

Describe the features of media presentations that help determine the grade level.

Alternative Learning Activities

Instructions

Listed in the Learning Activities are several alternative methods of achieving the package objectives. A description of each activity, including a summary of the content, is provided for each alternative. It will be up to you to choose those activities which interest you. You should work with the material until you feel that you have achieved the package objectives. When you think you are ready, take the self-test and see how much you really do know. Good luck and have fun.

Alternative No.1

Illustrated Tape Activity.....Obtain the cassette tape entitled SELECTION AND EVALUATION and listen to the tape in conjunction with the illustrated material contained in this package. This presentation describes basic evaluation procedures and compares several forms used for evaluating different types of media. After studying the various evaluation procedures, use the suggested evaluation form to evaluate one or more films, TV programs or filmstrips.

Alternative No.2

Reading Activity.....Read in the Brown, Lewis and Harcleroad text pages 43-45 and 378-380. The first short section explains several criteria for media selection. The second section deals with evaluating sponsored materials. Also see Reference Section 5, pages 550-572, which is a classified directory of sources of instructional media. Next, read the GUIDELINES FOR PREPARING MEDIA EVALUATIONS handout. Then evaluate one or more films, TV programs or filmstrips using the suggested evaluation form.

Self-Test

The Self-Test is a set of questions that may be utilized strictly for your own benefit. As you are working with the alternative activities, try the Self-Test questions as a check to see how much of the information you have mastered. A Self-Test key follows the test so that you can check your answers.

1. The production date of a film indicates:
 - a. the usefulness of the film.
 - b. the accuracy of the content.
 - c. the quality of the production.
 - d. the year it was released only.
2. If media evaluations are to be generally useful over a range of subject areas and grade levels, the media evaluation must suggest:
 - a. how the media relates to a particular subject.
 - b. several alternative uses of the media.
 - c. how accurate the media content is.
 - d. other media that may be used to supplement the media being evaluated.
3. The synopsis section of an evaluation form should explain what the media is about and describe any special
 - a. alternate uses.
 - b. production or photographic techniques used.
 - c. projection equipment required.
 - d. all of the above.
4. Check-list type media evaluation forms are quick and easy to fill out
 - a. and are useful as reference tools.
 - b. but usually provide very little information concerning the media.
 - c. and may be more easily duplicated.
 - d. all of the above.
5. All personal interpretations or criticisms of a particular media being evaluated should appear in what section of an evaluation form?
 - a. Synopsis
 - b. Comments
 - c. Purpose
 - d. a or b
6. List several bibliographic sources of instructional media.
7. Explain why a media evaluation form should list more than one purpose for a particular media.

Self-Test Key

1. d
2. b
3. b
4. b
5. b
6. a. Westinghouse Learning Directory
b. NCEM Indexes
c. Guide to Free Filmstrips
d. Entelek Programmed Instruction Guide
e. Media Catalogs from Universities and Colleges
f. Media Catalogs from Commercial Producers
7. An evaluation form should list more than one purpose so that the form may provide a wide base of alternatives for teachers and students in different subject areas, and on varying grade and age levels.

Quest

Below are some suggested activities that you may do after you have completed the package. These quest activities are optional and for those who would like to explore, in depth, topics related to the selection and evaluation of educational media. If you have an idea you would like to pursue, see your instructor and he will help you to get started.

1. Design your own evaluation form and compare its advantages against the EFLA type form.
2. Evaluate media such as kits and games or models using the EFLA type form. Is the EFLA form effective for these media?
3. Start a file of media evaluations on a particular topic or subject area. File the evaluations so that they may be easily retrieved.
4. Prepare a bibliographic list of commercial media that is available in your subject area.

GUIDELINES FOR PREPARING MEDIA EVALUATIONS

Evaluation includes a critical appraisal of the major strengths and weaknesses of the content, devices, and presentation of the matter, and the relative value of the production in terms of materials available.

The general appraisal should be in terms of the unit as a whole in relation to its possible use and the purposes and objectives for which it may be used in different circumstances.

Title and Types of Media

This section includes the actual title of the media, the series title if the media is part of a series, the subject classification and the pertinent information describing the type and format of the media.

Production Data

Sufficient production information should be provided to identify the original producer and to indicate where the media is presently available, and at what cost.

Synopsis

The synopsis, usually 50 to 100 words in length, should be objective and not necessarily summarize the media, but describe what it is about, what it does, and the way it does it.

Ordinarily a verb phrase is used, instead of a topic sentence, to concisely describe the media. Statements and the language used should have explicit reference to the content. General terminology and fuzzy phrases should be eliminated either during the writing or upon rewriting. Concrete terms need to be employed and telegraphic language practiced. Superfluous phrases should be omitted. Comparative and superlative words should be used not as a matter of opinion or judgment, but in a factual sense. Should the media reveal that it is particularly well suited to particular techniques or readily adapted to certain definite classroom situations, such situational uses may be noted. The evaluator's biases and personal opinions should not be included in the synopsis.

Purposes and Suggested Audience

The major purposes along with the recommended audience should be precisely stated. Most media can be used for multiple purposes depending on how the media is used, and the background experience of the instructor and the learners. The major purpose should be stated (using a verb phrase) so that it clearly describes the objective of the media. The purpose should be as specific as possible. As an example, "to introduce skiing" is very general and would be more informative if it was stated "to demonstrate basic skiing techniques." Secondary purposes should be stated in order to indicate the full potential of the media.

Recommended Grade Level

The grade level or levels are revealed by the following characteristics:

age of characters:	type, actions, and occupation
content:	difficulty, interest type of language, vocabulary, intention of language, pacing-speed, phrasing, timing, dramatics.
purposes:	expressed, advertised, intended, obvious, subtel
subject	type, difficulty, organization,
matter:	means of presentation, techniques

Comments and General Impressions

Factors which differentiate the production from other similar works or make it outstanding or inferior as a production include:

Strengths: (does it? or is it?)

achieve purpose	characterization good
interesting or entertaining	dramatization good, tasteful
simple and clear presentation	good introduction, climax, summary
natural situations	stimulating
good animation	motivational
beauty of scenery	reiterates important points
unique treatment	good commentary
accurate subject matter	maintains vocabulary level

Weaknesses

fails to meet purposes	above or below grade level
artificial	language and content not
stereotypes	synchronized
poor techniques	better covered by other
over-dramatized	materials or methods
generalizations unfounded	factual errors
not enough material for time	obsolete
subject too abstract	too verbalistic
pace too fast	prejudiced
poor organization	ineffectively illustrated

Media Use

Evaluators and selectors should always keep foremost in their minds the consideration that it is the manner in which the media is introduced into the classroom and utilized thereafter that is the most significant factor and often the determining factor in effective media usage.

INSTRUCTIONAL MEDIA EVALUATION

Title _____

Subject Area(s) _____

Type of Media

Detailed Information Concerning Media

FILM

Color___ B&W___ Time___ min. 16mm___ 8mm___ Sound___ Si.____

TELEVISION PROGRAM

Color___ B&W___ Time___ min. Live Date___ Videotape
type____

FILMSTRIP

Color___ B&W___ # Frames___ Sound___ Silent___

TAPE RECORDING

Time___ min. Reel Size___ Recording Speed___ i.p.s.

RECORD

Time___ min. Stereo___ Monaural___ 33-1/3___ 45___

OTHER

Pertinent Information

Producer _____

Purchase or Rental Source _____

Date Produced _____

Cost: Purchase___ Rental___ Free___

Recommended Grade

Primary___ Intermediate___ Jr.High___ Sr. High___ College___ Ad.____

Synopsis: _____

_____Major Purpose for Which Material Might be Used (Include Suggested Audience) _____

How Well Does Use of This Material Accomplish This Purpose?

Excellent___ Very Well___ Adequately___ To Some Extent___ Poorly___

Other Purposes for Which Material Might be Used: _____

Technical Quality:

Sound___ Excellent___ Good___ Fair___ Poor___

Photography___ Excellent___ Good___ Fair___ Poor___

Name & Title of Evaluator: _____

Evaluation Date: _____

Comments & General Impression (Continue on back if necessary) _____

INSTRUCTIONAL MEDIA EVALUATION

Title Skiing: Beginning MovementsSubject Area(s) Skiing

Type of Media

Detailed Information Concerning Media

FILM

Color ☒ B&W ☐ Time 10 min. 16mm ☒ 8mm ☐ Sound ☒ Si. ☐

TELEVISION PROGRAM

Color ☐ B&W ☐ Time ☐ min. Live Date ☐ Videotape type ☐

FILMSTRIP

Color ☐ B&W ☐ # Frames ☐ Sound ☐ Silent ☐

TAPE RECORDING

Time ☐ min. Reel Size ☐ Recording Speed ☐ i.p.s.

RECORD

Time ☐ min. Stereo ☐ Monaural ☐ 33-1/3 ☐ 45 ☐

OTHER

Pertinent Information

Producer Spencer Nelson Prod. Purchase or Rental Source U of U Media CenterDate Produced 1965 Cost: Purchase ☐ Rental 3.50 Free ☐Recommended Grade ☐ Primary ☐ Intermediate ☐ Jr. High ☒ Sr. High ☒ College ☒ Ad. ☒

Synopsis: Illustrates several beginning skiing techniques using close-ups, slow motion and animation. The viewer learns the basic steps as a narrator describes the action. Models are used to demonstrate putting on skis, walking, side stepping, and body stance. The basic techniques such as weight shifting, fall line skiing, proper knee bending, correct falling, and proper pole movements are illustrated. Safety is stressed throughout the film as the viewer is shown exercises for warmingup and for relaxing when tired. Skills for beginners are demonstrated.

Major Purpose for Which Material Might be Used (Include Suggested Audience)

Demonstrates basic skiing technique Beginning skiers

How Well Does Use of This Material Accomplish This Purpose?

Excellent ☒ Very Well ☐ Adequately ☐ To Some Extent ☐ Poorly ☐

Other Purposes for Which Material Might be Used:

Illustrates teaching methods Ski InstructorsSports enthusiasts General InterestTechnical Quality: Sound Excellent ☒ Good ☐ Fair ☐ Poor ☐Photography Excellent ☒ Good ☐ Fair ☐ Poor ☐Name & Title of Evaluator: Scharlene Micholes, StudentEvaluation Date: ☐

Comments & General Impression (Continue on back if necessary)

The film was extremely authentic even though experts were used to portray beginners. The experts made basic skiing look much easier than it really is! The film illustrates basic techniques in an appealing manner. An excellent film that came straight to the point and effectively created enthusiasm for the sport of skiing.

COUNCIL ON INTERNATIONAL NONTHEATRICAL EVENTS, INC.

Film Rating Sheet

Title _____

Sponsor _____

Producer _____

(Fill in only one rating for each criterion)

- | | |
|--|---|
| 1. <u>General Reaction</u> -- If you were a member of a foreign audience at an international festival, would you enjoy the film? | Very Favorable (30 pts.) _____
Favorable (20 pts.) _____
Uncertain (10 pts.) _____
No (0 pts.) _____ |
| 2. <u>Creativeness</u> -- How imaginative and creative is this film? | Outstanding (30 pts.) _____
Good (20 pts.) _____
Average (10 pts.) _____
Poor (0 pts.) _____ |
| 3. <u>Unusual Appeal</u> -- Is there some quality of human interest or fascination that makes this film especially appealing? | High (20 pts.) _____
Average (15 pts.) _____
Some (5 pts.) _____
No (0 pts.) _____ |
| 4. <u>Technical Quality</u> -- (Keep in mind photography, the handling of people, editing, sound, etc.) | Excellent (20 pts.) _____
Good (15 pts.) _____
Average (5 pts.) _____
Poor (0 pts.) _____ |

Total _____

- | | |
|---|---|
| A. <u>Accuracy</u> -- Is this motion picture truthful and authentic, insofar as you can judge? | Yes ☐
Uncertain ☐
No ☐ |
| B. <u>Good Taste</u> -- Does this film show regard for the legitimate concerns of groups affected by its subject matter? Is it fair to every profession, nationality, race and creed? | Yes ☐
Uncertain ☐
No ☐ |
| C. <u>Proper Representation</u> -- If you were representing the United States abroad, would you be pleased to submit this film to general festival audiences? | Yes ☐
Uncertain ☐
No ☐ |

(If "No" to A, B, or C, please support your answer by commenting on the back of this sheet.)

Name _____

Regional Committee _____

Date _____

APPRAISAL FORM FOR AUDIO-VISUAL MATERIALS
IN TEACHER EDUCATION

Selection - Evaluation

Date _____

Title: _____

Producer: _____ Year produced: _____

Source(s): _____

Sale price _____ Rental price _____ Free _____

Technical Description: _____ minutes of sd. _____ si. _____ motion pictures _____

frames of sd. _____ si. _____ Slidefilm (with 78 _____ 33 1/3 _____ r.p.m. sound
recording). _____ minutes of transcribed materials (with 78 _____

33 1/3 _____ r.p.m. sound recording). _____ 2" x 2" slides. _____

3 1/4" x 4" slides. _____

Sound: Excellent _____ Good _____ Poor _____

Photography: Excellent _____ Good _____ Poor _____ B&W _____ Color _____

Areas of Use:

1. Professional Education: Indicate the major areas of use for this material with a rating: 1. Excellent 2. Good 3. Fair 4. Poor

_____ Understanding the Individual	_____ Staff Relationships
_____ Child	
_____ Motivation	_____ Philosophy (including History and Comparative Education)
_____ Methods (including laws of learning)	_____ Home & Community Relations
_____ Methods (specific subject matter area or areas)	_____ Guidance & Counselling
_____ Classroom Management	_____ Educational Programs (Public Relations)
_____ Tests & Management	_____
_____ Professional Growth	_____

2. General Academic Education. Subjects or courses where applicable: _____

3. Rate Usefulness in Teacher Education: 1. Excellent 2. Good 3. Fair 4. Poor

Pre-school _____ Elem _____ Secondary _____ Trade _____ College _____ Adult _____ Other _____

4. Opinions, Suggestions, and Comments: _____

INDIVIDUALIZED INSTRUCTION PACKAGE

entitled

8mm FILM AND FILM LOOPS

For

*Pre-service and in-service teachers or anyone interested
in learning about how instructional media may be utilized*

Rationale

This self-instructional package is designed to help you learn about 8mm film and 8mm film loop cartridges. The package concentrates on comparing the various 8mm formats and summarizes the characteristics of each. After completing the package, you will be able to determine which 8mm format would be most appropriate for a given instructional situation.

Content

This package focuses on the following ideas:

1. 8mm is an inexpensive and easily handled motion film format.
2. 8mm is available in several non-compatible forms.
3. Most 8mm films are short "single concept" films.
4. 8mm films and 8mm projection equipment are designed for individual or small group use.

Objectives

At the end of this package, each student will be able to:

Identify the distinguishing characteristics of the film formats used for 16mm film, 8mm film and film loops.

Contrast the cost of 16mm and 8mm films and projection equipment.

Describe the problem caused by the lack of standardization among 8mm reel and 8mm loop films.

Describe the various types of projection equipment available for use with 8mm film.

Explain the one unique characteristic of 8mm single concept films over other film formats such as slides or filmstrips.

List the advantages and disadvantages of the 8mm film loop format.

List the advantages and disadvantages of the reel-to-reel 8mm format.

Explain why 8mm and super 8mm films are limited to use with small groups or individuals.

Describe how sound may be added to 8mm films.

Explain the current trend concerning future use of 8mm films.

Alternative Learning Activities

Instructions

Listed in the Learning Activities are several alternative methods of achieving the package objectives. A description of each activity, including a summary of the content, is provided for each alternative. It will be up to you to choose those activities which interest you. You should work with the material until you feel that you have achieved the package objectives. When you think you are ready, take the self-test and see how much you really do know. Good luck and have fun.

Alternative No. 1

Slide-Tape Viewing Activity.....View and listen to the slide-cassette program entitled 8mm APPLICATIONS. The program will compare the various 8mm formats and discuss the present and future trends related to 8mm utilization. Review the 8mm characteristic chart included in the package.

Alternative No. 2

Reading Activity.....Start by reading pages 183-184 in the Brown, Lewis and Harclerod text. These pages present a very brief introduction to 8mm film. Next, read pages 473-476 in the Wittich and Schuller text. This section outlines several generalizations about the future of 8mm. You may also wish to study pages 498-499 in the Brown, Lewis and Harclerod text which illustrates the various types of 8mm projection equipment. Finally, review the two charts at the end of this package entitled CHARACTERISTICS OF 8MM FILM AND 8MM PROJECTION EQUIPMENT and CHARACTERISTICS OF 8MM FILM LOOPS AND LOOP PROJECTION EQUIPMENT.

Self-Test

The Self-Test is a set of questions that may be utilized strictly for your own benefit. As you are working with the alternate activities, try the Self-Test questions as a check to see how much of the information you have mastered. A Self-Test key follows the test so that you can check your answers.

1. How do 8mm film and projectors relate in cost, size, and weight to 16mm films and projectors?
 - a. 8mm is more expensive and larger in size and weight.
 - b. 16mm is more expensive and larger in size and weight.
 - c. 8mm is more expensive, but smaller in size and weight.
 - d. 16mm is more expensive, but smaller in size and weight.
2. 8mm sound films may have sound tracks using which processes?
 - a. Optical
 - b. Magnetic
 - c. Either optical or magnetic
 - d. Electrical
3. A disadvantage of 8mm films is
 - a. that they are usually in the film loop format.
 - b. large images cannot be projected with good quality.
 - c. projectors are usually automatic.
 - d. all of the above.
4. The main advantage of film loops over slides is that film loops provide for the projection as
 - a. animation
 - b. sequenced information
 - c. motion
 - d. colored images
5. How many 8mm films are available from commercial sources?
 - a. A much larger number than 16mm films.
 - b. A much smaller number than 16mm films.
 - c. About the same number as 16mm.
 - d. Approximately 4500 titles.
6. What factors have limited the use of 8mm films for instructional purposes?
7. Why is the 8mm loop very susceptible to damage?

Self-Test Key

1. b
2. c
3. b
4. c
5. b
6. a. the small number of 8mm films commercially available
b. nonstandardization of projection equipment
c. nonstandardization of 8mm film formats
d. problems with projector malfunctions
7. The film loop is susceptible to damage since the film rubs against itself during the film showing, thus slightly deteriorating the film each time it is shown.

Quest

Below are some suggested activities that you may do after you have completed the package. These quest activities are optional and for those who would like to explore, in depth, topics related to 8mm film and film loop applications. If you have an idea you would like to pursue, see your instructor and he will help you get started.

1. Develop an instructional unit incorporating 8mm films. Be able to justify the use of 8mm as an integral part of the unit.
2. Do a bibliographic search of titles available on 8mm film. See how many films are available in your subject area.
3. List two or three concepts or ideas that could be presented effectively as "single-concept" films. Outline the script and storyboard for one of your topics.
4. Compare the differences related to picture quality, sharpness and brightness between an 8mm projector and a 16mm projector, and between an 8mm projector and a slide or filmstrip projector.

CHARACTERISTICS OF 8MM FILM AND 8MM PROJECTION EQUIPMENT

1. 8mm films are less expensive, smaller in size and produce a lower quality image than 16mm films.
2. Like 16mm, 8mm film can be classified as having both fixed sequence and fixed pacing.
3. 8mm film and projection equipment is designed primarily for small group and individual use.
4. 8mm projectors are less expensive, smaller in size, and easier to set up and operate than 16mm projectors.
5. Most 8mm films are silent and correspondingly most 8mm projection equipment is silent.
6. 8mm films may be purchased in four non-compatible formats: standard 8mm reel, Super 8mm reel, standard 8mm cartridge, and Super 8mm cartridge.
7. Very few 8mm films are commercially available.
8. Commercially produced 8mm films are sold in a variety of non-standard continuous loop formats (see section on 8mm film loops) and reel formats.
9. 8mm films may be locally produced with inexpensive amateur equipment.
10. Film cost - approximately \$20.00 to \$30.00 for one to five-minute commercially produced films and approximately \$5.00 for three and one-half minute locally produced films.
11. Film projector cost - approximately \$100.00 to \$200.00 for silent projectors and approximately \$200.00 to \$600.00 for sound projectors.

CHARACTERISTICS OF 8MM FILM LOOPS AND FILM LOOP PROJECTION EQUIPMENT

1. Film loops are completely self-contained and do not require projector threading or take up reels.
2. Film loops can be classified as having both fixed sequence and fixed pacing.
3. Loop projectors are lightweight, compact, self-threading, and are easy to set up and operate.
4. Short film loops are designed primarily for individual viewing with the loop format providing easily repeated viewings.
5. Film loops are more effective than still projection formats when motion is inherently part of the material presented.
6. Film loops may be projected in a lighted room when utilized with rear screen projection.
7. Film loops and loop projectors lack standardization or interchangeability between film loops or between projectors manufactured by different companies.
8. Film loops tend to have fair to poor quality image resolution and are susceptible to scratching and wear since the film rubs against itself in the continuous film loop cartridge.
9. Film cost - approximately \$20.00 to \$30.00 for a single concept loop.
10. Film loop projector cost - approximately \$100.00 to \$200.00 for silent loop projectors.

INDIVIDUALIZED INSTRUCTION PACKAGE

entitled

PHOTOGRAPHY

For

**Pre-service and in-service teachers or anyone interested
in learning about how instructional media may be utilized**

Rationale

This self-instructional package is designed to help you learn about the characteristics of photography and slide utilization. The package concentrates on the basic elements necessary to take effective pictures, either slides or prints. After completing this package, you will be able to more successfully take, organize and utilize slides in instructional situations.

Content

This package focuses on the following ideas:

1. Photography may be effectively used in instruction.
2. Quality photography requires adherence to several basic rules.
3. Slides are an easily produced, inexpensive and flexible media.

Objectives

At the end of this unit, each student will be able to:

Describe several uses for photography in instruction.

List four or five picture taking elements that when properly utilized produce good pictures every time.

List and describe several considerations for composing a good picture in the camera viewfinder.

Describe several factors to consider in relation to choosing the background for a picture.

Describe the limitations of a fixed aperture and fixed shutter speed as found on some "Instamatic" cameras.

Explain the type of control possible when using an adjustable (aperture, speed, focus) camera.

Describe the advantages and limitations of using a flash cube or flash attachment. Also indicate when flash should be used.

Describe the accessories usually needed to take close-up pictures.

Describe the equipment necessary to take slides of flat pictures indoors.

Alternative Learning Activities

Instructions

Listed in the Learning Activities are several alternative methods of achieving the package objectives. A description of each activity, including a summary of the content, is provided for each alternative. It will be up to you to choose those activities which interest you. You should work with the materials until you feel that you have achieved the package objectives. When you think you are ready, take the self-test and see how much you really do know. Good luck and have fun.

Alternative No. 1

Viewing Activity.....View the first seven minutes of the film entitled BASIC CAMERA. This film describes the historical development of the camera and illustrates the components of the box camera. These components are exactly the same as in the modern "Instamatic" cameras. Next, view the slide presentations: SNAPSHOT CAMERA HANDLING and ADVENTURES IN OUTDOOR COLOR SLIDES. These two programs, originally produced by Kodak, present a comprehensive overview of basic photographic principles. The first program concentrates on the inexpensive "Instamatic" camera while the second program concentrates on slightly more advanced skills. Don't be worried if some of the principles discussed are over your head; concentrate on the basics. After viewing the slides, go through Section IV, entitled SLIDE PROJECTION in the Yeaman's programed text. This section reviews the various formats and the different types of slide projection equipment.

Alternative No. 2

Reading Activity.....Read Chapter 10, pages 261-285, and pages 522-533 in the Brown, Lewis and Harclerod text. Chapter 10 presents a concise introduction to photographic techniques including information on the preparation and utilization of a shooting "storyboard" and information on adding sound to slide presentations. Pages 522-533 explain the features of a camera and makes suggestions for choosing of a camera and choosing the appropriate film. Next, take Section IV in the Yeaman's programed text, entitled SLIDE PROJECTION. This section reviews the various slide formats and discusses different types of slide projection equipment.

Self-Test

The Self-Test is a set of questions that may be utilized strictly for your own benefit. As you are working with the alternative activities, try the Self-Test questions as a check to see how much of the information you have mastered. A Self-Test key follows the test so that you can check your answers.

1. Flash cube slides are limited to scenes approximately how many feet away from the camera?
 - a. one to twelve
 - b. one to six
 - c. six to fifty
2. Copying materials onto the slide format usually requires the use of a
 - a. light meter.
 - b. close-up lens.
 - c. flash cube.
 - d. exposure meter.
3. The amount of light reaching a piece of film is controlled in a camera by the
 - a. aperture size and shutter speed.
 - b. aperture speed and shutter size.
 - c. aperture size and focus speed.
 - d. focus speed and shutter size.
4. Fixed "Instamatic" cameras are designed to take pictures outside under which of the following conditions?
 - a. Cloudy weather
 - b. Medium bright sunshine
 - c. In shaded areas
 - d. In the rain
5. Indoor pictures require the use of flash or
 - a. special indoor film.
 - b. special indoor camera.
 - c. adjustable focus control.
 - d. special lenses.
6. What is a parallax problem and how can it be eliminated?
7. What are several limitations for taking slides or pictures indoors?

Self-Test Key

1. c
2. b
3. a
4. b
5. a
6. Parallax is caused by the viewing lens being located in a different place than the picture-taking lens. Each of the two lenses see a slightly different picture. This can be reduced or eliminated by tilting the camera so that the picture-taking lens is in line with the subject.
7. Pictures taken indoors, in most cases, require the use of flash cubes, flash bulbs, or flood lighting equipment. Photo flood indoor lighting also requires the use of special "indoor" film.

Quest

Review the quest activities listed below, and see if there are any you would like to try. These quest activities are optional for those who would like to explore, in depth, areas related to slides and principles of photography. If you have an idea you would like to try, see your instructor and he will help you get started.

1. Review the two Kodak publications, ADVENTURES IN OUTDOOR COLOR SLIDES and ADVENTURES IN INDOOR COLOR SLIDES. These booklets supplement the Kodak slide presentations utilized in this package.
2. Make a slide presentation for a specific instructional situation. Include behavioral objectives and a statement of the purposes for the presentation.
3. Design and produce an instructional how-to-do-it sequence of either slides or prints. Include any narrated material necessary for utilizing your series.
4. View the Kodak slide-tape presentation entitled ADVENTURES IN INDOOR COLOR SLIDES. This program presents some advanced techniques for taking indoor pictures and slides.
5. Shoot a set of slides showing examples of the various hints and techniques for good photography discussed in this package.

INDIVIDUALIZED INSTRUCTION PACKAGE

entitled

PROGRAMED INSTRUCTION

For

*Pre-service and in-service teachers or anyone interested
in learning about how instructional media may be utilized*

Rationale

This self-instructional package is designed to help you learn about programed instruction principles and programed instruction materials. The package will differentiate programed instruction materials from other types of "so-called" programed materials. After completing this package, you will be able to knowledgeably use programed materials in instructional units.

Content

This package focuses on the following ideas:

1. Programed instruction is a teacher independent, self-pacing form of instruction.
2. Programed instruction materials are available on all grade levels.
3. Programed instruction materials may be organized in a variety of formats.
4. Programed instruction materials are primarily used outside a regular classroom.

Objectives

At the end of this unit, each student will be able to:

Define and describe several characteristics of programed instruction materials.

Suggest instructional areas and grade levels where programed materials can be most effectively utilized.

Describe the features of programed instruction materials that allow them to be effectively utilized in self-instructional environments.

Explain the features of programed materials that must be carefully evaluated when selecting commercially prepared programed materials for classroom use.

Describe the basic elements of a programed instruction frame.

Explain the difference between linear and branching programs.

Describe the problem of presenting confirmation exposure in printed programed materials. Suggest how the problem may be eliminated.

Alternative Learning Activities*Instructions*

Listed in the Learning Activities are several alternative methods of achieving the package objectives. A description of each activity, including a summary of its content, is provided for each alternative. It will be up to you to choose those activities which interest you. You should work with the material until you feel that you have achieved the package objectives. When you think you are ready, take the self-test and see how much you really do know. Good luck and have fun.

Alternative No.1

Film Viewing and Program Evaluation Activity.....View the film entitled LEARNING THROUGH PROGRAMED INSTRUCTION. This nine-minute film presents the basic fundamentals of programed instruction - participation, feedback, and positive reinforcement. Also discussed are the major types of programed instruction and means of presenting programs in either book or machine format. Note the programed materials may make use of other media such as tape recordings, slides and films. Next, take the sample program HOW TO PICK A LOCK, included in this package, and evaluate this program in relation to the information provided in the film. Also compare this program to the Yamans' programed text that you have used in other units. Which format seems to be preferable?

Alternative No.2

Reading Activity.....Read the chapter from the third edition of the Wittich and Schuller text, included in this package, entitled PROGRAMED INSTRUCTION. This chapter defines the programed instruction process, including its development, the selection of programed materials and ways to use programed materials effectively. Next, take the sample program HOW TO PICK A LOCK, also included in this package, and evaluate this program in relation to the criteria discussed in the reading.

Self-Test

1. Which programing format more accurately considers ability differences between individual students?
 - a. Branching
 - b. Line or linear
 - c. Bilevel
 - d. Developmental
2. In using a linear program, one must remember that each student, regardless of background and/or ability, must:
 - a. proceed through each and every program frame.
 - b. have branching frames for points needing clarification.
 - c. consent to constructing responses from the separate manuals provided.
 - d. all of the above.
3. Programed materials are most effectively used
 - a. in the classroom.
 - b. as homework or individual assignments.
 - c. in large group environments.
 - d. all of the above.
4. Programed materials can be characterized as being:
 - a. teacher oriented.
 - b. teacher independent.
 - c. student independent.
 - d. teacher dependent.
5. Programed instruction "frame" consists of three elements:
 - a. information, provision for response, instruction.
 - b. information, provision for response, reinforcement for the response.
 - c. information, reinforcement for a response, knowledge of the results.
 - d. information, provision of response, supplementary concepts.
6. When selecting programed materials what are some of the features that you must carefully evaluate?
7. List three or four different methods of preventing response pre-exposure.

Self-Test Key

1. a
2. a
3. b
4. b
5. b
6. One must carefully evaluate:
 - a. appropriateness of age and grade level.
 - b. sufficiency of information presented in each frame.
 - c. time required to complete program.
 - d. requirements of an external device.
 - e. availability of testing instruments and assessment data.
7. a. Print responses on back side of page.
b. Print responses randomly on a separate sheet.
c. Print responses upsidown on the same page.
d. Print responses on the following page.

Quest

Below are some suggested activities that you may do after you have completed the package. These quest activities are optional and for those who would like to explore, in depth, topics related to programed instruction. If you have an idea you would like to pursue, see your instructor and he will help you get started.

1. Develop a bibliography of programed instruction materials in your subject area. Also evaluate the usefulness of these materials.
2. Try to write a programed unit on a subject of your choice. You will probably need to refer to one or more books at the library, dealing with writing programed materials.
3. Compare the various forms of both linear and branching programed instruction materials. Include a description of the advantages and disadvantages of each.
4. Survey ten to twenty students who have been exposed to programed materials. Determine their feelings related to the value and effectiveness of programed instruction.
5. Outline the type of validity and reliability information concerning programed materials that is directly useful to the classroom teacher.

PROGRAMED INSTRUCTION

Chapter 16 from Audiovisual Materials, Fourth Edition, by Wittich and Schuller, Harper and Row, 1967.

Programed instruction, teaching machines, programed learning—these are terms which do not fail to trigger spirited discussion of their definitions, advantages, and limitations as teachers and parents contemplate the possibility that here may lie the solution to many educational problems. Those who support the idea hope for release from the time-consuming tasks of fact giving by assigning these responsibilities to mechanical instruction. Those who oppose the idea believe that, as yet, there is no research evidence to show that programed instruction can accomplish better learning outcomes. Nevertheless, programed instructional materials are in increasingly wide use.

The interest in programed instruction is not confined to the United States. Over 1000 programed learning sequences are in use in Japan; and England, France, Germany, Nigeria, and the Union of South Africa are among those countries where experimentation is being now pursued.

□ PROGRAMED INSTRUCTION DEFINED

Programed instruction is the means by which information is provided for the pupil in bit-by-bit, step-by-step sequences, each segment of which contains a highly specific idea, asks a question directly related to this idea, calls for the student to reply to this question before proceeding to the next segment, and then supplies the correct answer to this question which the student can compare with his own response. Each segment, or "frame," leads logically to the information contained in the next.

Of course, the concept of programed instruction involves the basic assumption that the information contained in a unit or course can be arranged into such clearly defined, specific segments; unfortunately, the larger part of man's knowledge does not lend itself to this programing. For example, name-and-place geography, spelling, basic number operations, rules of grammar, interpretation of electrical diagrams—all lend themselves well to segmentation of ideas. However, land-use and conservation science, style of writing, political and sociological understanding, and the like are fields which call for value judgments and interpretive analysis. While these, too, might conceivably be programed, such segmentation of their concepts would be difficult; at best, the learning outcomes may be expected to leave much to be desired in terms of the learner's creative thinking ability.

Programed instruction is presented to the pupil in a variety of forms using a variety of materials.

The several types of programs include step-by-step, branching, and cross-media programs. In the step-by-step programs, the subject content is usually broken down into the most logical sequence of developmental steps. This learning process may be compared to climbing a long stairway on a series of uniformly spaced steps; some learners will climb faster and farther than others. This kind of organization of programed instruction is also called "straight line" programing.

Branching programs resemble step programs, but the intervals may be larger. Some pupils find themselves unable to proceed at a certain point in a step program because they need intermediate or smaller steps to provide them with background information. In branching programs, they are led to "bypaths" which fulfill this need by means of supplementary sheets of materials that can be studied and learned. Other pupils who do not need to take a bypath can skip it and proceed to the next major step. Branching thus is designed to accommodate individual differences in pupil learning behavior.

The programed sequences may be presented on long paper rolls, on sheafs of paper, on cards, on accordion-folded paper, in folders, or in textbook or workbook format.

Charts, diagrams, pictures, and other visuals—including filmed sequences and filmstrips—can also become part of the program, as can tape-recorded materials. In many cases, programed learning is presented to the pupils through a complex of mechanical equipment, such as teaching machines. Several machines, now in the experimental stage, call for slides, filmstrips, audio tapes, and sound motion-picture films. As such teaching machines are developed further, it is possible to envision the highly individualized use of many of the audiovisual materials described earlier in this book.

In all forms of programed learning, the following principles obtain:

1. The learner is given a specific item of information and asked for a response which relates directly to the item.
2. The learner is given immediate feedback about his response which, in the case of a correct response, provides reinforcement of the learned idea or, in the case of an incorrect response, allows him to go back and repeat the sequence until his response matches that provided in the programed material.
3. The learner thus proceeds at his own pace and is freed from the restrictions placed upon him by the pace established in group learning.
4. Information is presented in logical sequences which lead the learner from simple to increasingly advanced work.
5. Programed learning activity requires the learner's sustained participation.
6. Because the learner cannot proceed without providing correct responses each step of the way, successful learning outcomes of a programed unit or course is ensured, providing that the learner perseveres and completes correctly the required sequence of responses.

In the usual classroom situation much of the recitation time is taken up by one pupil as he recites to the teacher, who cannot be sure that the other pupils are following the recitation, or supervise their ongoing processes. It would be impractical to have each pupil in the class repeat the same recitation during the period, and thus it becomes impossible to assess the detailed learning processes of those who are not actively participating.

When a student is using an autoinstructional device, however, all interaction takes place between him and the subject program. In other words, there is intense individual participation over a short period of time rather than the sporadic participation provided him in group activity over a longer period. It is entirely feasible for a classroom to have several different programed instructional materials available to individual learners. By staggering the students' work—for example, on arithmetic and on spelling, and vice versa—the materials could be kept in use profitably. Or, the pupils in an entire class might take turns using the various sets of programs available and pace themselves in terms of their abilities and interests.

□ THE DEVELOPMENT OF PROGRAMED INSTRUCTION

Programed learning was being investigated as early as the 1920s, when Dr. Sidney Pressey designed a pioneer form of teaching machine. This device provided the student with questions and multiple-choice answers. After selecting his answer, the student recorded it by pressing a numbered button which corresponded to the number of the answer. The machine immediately indicated whether this response was correct or not. Thus learning took place, evaluation was immediate, and progress was encouraged.

This early research work has been repeated and improvements made by many investigators, of whom the best known is B. F. Skinner. The learning programs devised by Skinner incorporated improvements which not only measured the information learned, but also provided the pupil with a logically developed sequence of ideas. In Skinner's System, the instructional material is presented to the student, one "frame" at a time, in a small window on the face of the machine. The student writes his response on a section of paper in a slot near this window. He then moves a lever which exposes the correct response, and the student compares this with his written response. If his answer is correct, he brings the next frame into view and repeats the process. If the response is incorrect, the question is automatically "marked"; it may reappear later to give the learner a chance to correct himself and to learn the accurate information. Skinner describes the characteristic of his machine program as follows:

1. There is a constant interchange between the programmed materials and the student. Unlike lectures, textbooks and the usual audio-visual aids, the machine induces sustained activity. The student is always alert and busy.
2. Like a good tutor, the machine insists that a given point be thoroughly understood, either frame by frame or step by step, before the student moves on. Lectures, textbooks and their mechanized equivalents, on the other hand, proceed without making sure that the student understands and easily leave him behind.
3. Like a good tutor, the machine presents just that material for which the student is ready. It asks him to take only that step which he is at the moment best equipped and most likely to take.
4. Like a skillful tutor, the machine helps the student to come up with the right answer. It does this in part through the orderly construction of the programmed information and in part with technics of hinting, prompting, suggesting and so on, derived from an analysis of verbal behavior.
5. The machine, like a private tutor, reinforces the student for every correct response, using this immediate feedback not only to shape his behavior most efficiently but to maintain it in strength in a manner which the layman would describe as "holding the student's interest."¹

¹ B. F. Skinner, "Teaching Machines," *Science*, October 24, 1958.

The material Skinner uses to teach the spelling of the word *manufacture*, for example, is based on the difficulties involved in mastering this word. It is not enough to memorize; the pupil is expected to understand its meaning from analyzing the root of the word, the choice of letters, the repetitious use of letters, and so forth.

The pupil's first task is to copy the word. He must next identify the root *fact*, and then the root *manu*. In the fourth and fifth frames, he is asked to insert letters. Finally, he is tested on his ability to grasp the entire word.

Arithmetic provides another illustration. Too often arithmetic has been taught by drilling for memorization. However, it can be taught as a matter of understanding number relationships logically. In the multiplication table for 9, for example, the machine cards present not only the table for 9, but some of the basic principles involved in understanding the behavior of this number. For example, 9 times a number is the same as 10 times that number minus the number; i.e., 9 times 3 is 27; 10 times 3 is 30 minus 3 is 27. So also, the digits in a multiple of 9 add up to 9; thus, 18 is 1 plus 8; 36 is 3 plus 6; 81 is 8 plus 1. The cards also point out that, in composing successive multiples of nine, one counts backward: *nine, eighteen, twenty-seven, thirty-six, forty-five, fifty-four, sixty-three*, and so forth. Thus, as the subject card outlines these relationships and calls upon the student to fill in the blanks correctly. The student's ability to understand the logic of a multiplication sequence and to multiply accurately are tested simultaneously.

Today, the principles advanced by Pressey, Skinner, and others are being applied in a variety of ways—using a variety of assorted materials—in many subject areas.

□ PROGRAMED INSTRUCTION AND RESEARCH

Since 1955, more than 300 research investigations have been made probing the question of whether programed instructional materials could communicate information as well as the teacher. The results of most of these have shown no significant differences between traditional teaching methods and programed instruction. This is regarded by some people as an indication that the present forms of programing are inadequately conceived and used; that is, they interpret these findings as a natural consequence of early attempts to cope with the great problems involved in organizing and writing programs. Certainly it is conceivable that the progress in programed instruction over the last ten years has actually resulted in little more than enabling those who make and use programed instructional materials to begin to understand its tremendous potential. The danger of accepting and being satisfied with current progress in programed instruction is expressed in a recent publication:

The potential of programed learning is, so far, largely unrealized. Although the research gives us little reason to be satisfied with the theories and the standards of today's programing, and every reason to believe that it will be possible someday to make programs vastly more effective than today's, nevertheless, programed instruction shows signs of hardening, partly under commercial pressure, into a fixed and mechanical technology, with theories and procedures taken for granted.²

² Jack V. Edling, et al., *Programed Instruction: Four Case Studies*, The Fund for the Advancement of Education, June, 1961.

However, a research project of special note is occasionally reported. An experiment at Roanoke, Virginia, for example, has shown that eighth-grade pupils accomplished a full year's course in algebra in one semester—half the time required by their ninth-grade friends who took the traditional course; 45 percent of the eighth-grade group attained the level of performance attained by 50 percent of the ninth-grade group.³ Still other research on the use of programed instruction indicates that substantial areas of subject content can be learned with efficiency through their use.

What does the "consumer" think of programed instruction? One good way to do this is to ask students who have worked with it.

The sum of the research findings can be generalized as follows:

1. Gifted children who have self-motivating qualities can progress at a pace limited only by their interest.
2. The use of programed materials will free teachers to give additional time to counseling, individualized instruction, and the teaching of difficult areas of subject content not readily adaptable to programed presentation.
3. The use of programed materials can increase the speed of accomplishment for those pupils who can and will use these new materials to move ahead at an accelerated pace.
4. Teaching machines will be developed which incorporate audio and visual experiences, thus invading subject content areas more complicated than those which rely on the written word alone.
5. Programed instruction permits the pupil to correct or to evaluate his work immediately, permitting him to move rapidly from step to step in learning a sequence—an obvious advantage over the use of workbooks and assignments where hours or days may elapse before the pupil knows whether his work is correct. While the pupils await the return of their graded tests and papers, they are usually working on their next assignment; yet the students should know the results of their previous efforts before going on to a more advanced task.

The continuing research in this field will explore the effect of the intelligence of the learners. Related questions are also likely to be investigated, particularly those which concern the effect of programed instruction on the creativity of students and the relationship between this means of instruction and maturity level and the possibility of boredom.

Even if we assume that no difference does exist between the efficiency of the teacher and that of programed instructional methods there are advantages to communicating some kinds of information through the programed approach. For, if the latter does at least as good a job as the classroom teacher, it is not logical to assign instruction of the programable information to teaching machines and similar materials and thus free the teacher for other more creative tasks.

☐ THE CURRENT STATUS OF PROGRAMED INSTRUCTION

Carefully constructed and field-tested programs currently enjoy wide use. For example, *English 2600, A Program Course in Grammar and Usage* put out by Harcourt, Brace & World; *TEMAC—First Year Algebra* published by Encyclopaedia Britannica Inc.; *Vocabulary Development* by Science Research Associates; and dozens of related series published by Grolier, Coronet, Harper

³ E. W. Rushton, "Teaching Machines, A Research Report," *Nation's Schools*, February, 1961.

& Row, and others are being used at a rate of hundreds of thousands of units per year.

The first flurry of enthusiasm for programed instruction witnessed the invention of dozens of mechanical devices for exposing program materials to learners. At one time, there were more machines than programs. Those who inquired about this were often told that all the teacher needed was "a machine," and then he could write all the programs he needed. Teachers who have undertaken to write programs usually discover that the time and skill necessary to produce a precision program is far beyond that available. It is comparable to saying, "Here is a five-hundred-page blank notebook; now, write your own textbook." Thus, it follows that the task of writing instructional programs has been accomplished more and more by textbook publishers and by newly formed groups which specialize in the preparation of programed instruction as such.

The usual procedure followed by these groups is to produce program learning materials through the cooperative efforts of a learning psychologist, a subject expert, and an educator. Such teams have produced programs which are widely accepted.

LESSON THIRTEEN

This lesson will help you learn how to use correctly two more of our "denion" friends.

May and can give some of us a lot of trouble. But you should have no trouble after finishing this lesson.

Let's see what there is to help us keep these two straight.

Can means "to be able"

May means "permit" or "allow" or "has permission"

In other words, if you were talking about your mother giving you permission to go to the show, you might say this: My mother said I go to the show.

2-6 can

10-7 may

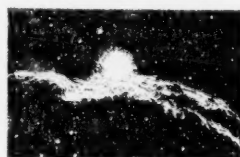
If you meant you were able to do something, you might say something like this: I run fast.

8-24 can

9-20 may

Fig. 1 / Four specimen pages from programs currently available: *English Usage* (Merritt Associates, San Francisco); *Modern Algebra* (Encyclopaedia Britannica Films); *General Science: Astronomy* (Encyclopaedia Britannica Films); and *Weather* (Coronet). What judgments do you make about grade level, content validity, appropriateness to learner's abilities?

1192 You have probably seen the common constellations. Some may seem to be connected lines of stars, but they are not.



The Milky Way

1193 The stars in the constellation of a great glowing band across the sky.

1194 If we could see a great big star, it would be like a great big light in the sky. It would be like a great big light in the sky.

1195 Look at the stars in the sky. They are like a great big light in the sky.



The Milky Way

CONDITIONS AND RELATIONS

1090 Suppose a system of stars is connected by lines. The system is called a constellation. The stars in the constellation are called stars.

1091 Suppose a system of stars is connected by lines. The system is called a constellation. The stars in the constellation are called stars.

1092 Suppose a system of stars is connected by lines. The system is called a constellation. The stars in the constellation are called stars.

1093 Suppose a system of stars is connected by lines. The system is called a constellation. The stars in the constellation are called stars.

1094 Suppose a system of stars is connected by lines. The system is called a constellation. The stars in the constellation are called stars.

1095 Suppose a system of stars is connected by lines. The system is called a constellation. The stars in the constellation are called stars.

Set 7

A Cloud Cycle

7-1 If the sky is very cloudy people often say, "It looks like rain."

rain

7-2 But not all clouds bring rain or snow. You have learned about four basic kinds of clouds: and are the names of the basic kinds of clouds.

cirrus, cumulus, stratus, nimbus (any order)



FIGURE 5

7-3 Figure 5 shows a diagram of the sky above two towns. Over Springfield fluffy white clouds are floating, but in the other town, 100 miles west of Springfield, it is .

cumulus, raining

7-4 Clouds move with the wind. In Figure 6, the arrow shows that the clouds are moving from to (what direction?).

west, east

7-5 Look at Figure 5 and you will see that after the cumulus clouds pass Springfield, the cirrus clouds will move westward. After the cirrus clouds will come the clouds.

stratus

7-6 Look at Figure 6 again. After the stratus clouds will come the clouds, and then Springfield will have precipitation.

nimbus

Despite the advantages of programed instruction, and its enthusiastic reception by educators, however, there are some limiting factors which need to be considered:

1. Materials are available primarily for mathematics, science, the social studies, and the language arts, and are lacking for many other subjects such as art, music, home economics, and various interpretive studies.
2. Because of their verbal quality, programed instructional materials greatly increase the reading task. Reading ability may greatly influence the progress which students make.
3. Programed instructional materials rely on the principle of reinforcement of learning. The result is likely to be oversimplification and narrowness of concept building in programs where reinforcement involves a single-track approach consisting of rather narrowly interpreted series of steps through which the pupil is expected to gain an understanding of broad aspects of the subject.

These limitations are not unsurmountable, however, and if anticipated by an imaginative teacher who selects and uses programed learning materials wisely, programed instruction can be an effective learning device for pupils and an efficient time-saver for the teacher.

☐ THE SELECTION OF PROGRAMED INSTRUCTIONAL MATERIALS

One of the first things a teacher needs to understand is that programed instruction is not available in all areas of school subject and teaching responsibilities. For this reason, the teacher is urged to secure the survey entitled "Programs, '63: A Guide to Programmed Instructional Materials," compiled and produced by the Center for Programmed Instruction, Inc. in cooperation with the U.S. Department of Health, Education and Welfare. In this the teacher will be able to examine actual specimen pages which represent several hundred programs. No better impression of the magnitude and coverage of existing programs can be gained than from examination of this publication.

In selecting materials, the teacher must apply most of the same criteria as have already been stated for films, tapes, filmstrips, or related instructional materials: suitability to subject content, validity, appropriateness to age level of pupils, etc. However, in the case of programed materials, the degree to which the program effectively fulfills the information-giving responsibility of the teacher must also be considered. A good program not only communicates factual content information at a rate that participating pupils choose for themselves, but also may take many of the students much farther into the subject than would be possible were they limited to the pace of the rest of the pupils in the class. The teacher must also carefully identify and supervise the pupils for whom branching experiences should be provided.

It is suggested that the reader examine the panel of specimen programs which are included in Fig. 16.6; the four specimens are representative of the programs in each of their subjects. It is suggested that, as he examines the content and the way it is presented, the reader keep in mind:

1. For what grade level is the program described?
2. Is grade level now the criteria, or is it the actual accomplishment potential of individual students that must be considered?
3. Under what use conditions can one program selection be made which will meet the needs of pupils in the class group of thirty-five or forty?
4. How does one actually schedule program use in the classroom?

In addition, a good part of the programed materials available rely on verbal stimuli and responses, and the teacher should take into account the degree of verbalism used in the materials. Where a good concrete experiential background to the concepts verbally presented has accrued to the pupils, as well as a high level of verbal skill, verbal program-learning materials may be quite suitable. However, many pupils do not have the verbal skills adequate to such programed experiences, and may lack sufficient conceptual background as well. Thus, when selecting his materials, the teacher must consider the abilities of his *particular* pupils, and where possible, plan to supplement programed instruction with related audiovisual media that will fill conceptual gaps with concrete experience.

□ USING PROGRAMED INSTRUCTION EFFECTIVELY

Programed instruction can take the place of the teacher as information giver *per se*, yet the teacher who accepts and makes programed instruction work discovers that it is a device which can actually help to accomplish what once took a large part of the teaching day—communicating factual information and explaining. One need only to recall how often teachers need to repeat and repeat explanations to realize how valuable programed instruction can be. Thus relieved, the teacher has more time to carry on planning, guidance, and creative functions which no mechanical device can now fulfill. Indeed, the rewards of programing are great enough to warrant its planning and management. There is no reason why the core activity of a classroom cannot continue, especially if this activity puts to creative use that which is learned through programing.

Before using the materials that have been selected, it is helpful to review with pupils the responsibilities which need to be accepted. Learning from programs is quite different from the usual socialized activity of the classroom. Instead of group activity and interaction, reactions to programs are highly individualized. Thus, pupils should know that comparison, discussion, or group consensus of opinion are things quite apart from their activities with programed materials. Rather, each pupil must accept program-learning responsibilities as a personal challenge. The reasons for using the materials should be made known, and the way in which program books are manipulated—not necessarily page by page, but item by item in terms of the concise directions to be followed—should be made quite clear to the pupils.

It should be pointed out that "peeking ahead" at answers will result in half-learning and will actually penalize the student. The individualized nature of pupil responsibility—reading, concentration, and self-honesty—should be stressed. If machines are used to present the learning stimuli or sequences of stimuli—stalemates, questions, or problems—instructions as to their use must be clearly understood so that this factor will not frustrate learning from the program itself. The pupil should also understand that he may proceed at his own pace. However, since few, if any, programs are so automatic that they anticipate all unforeseen questions or problems which students will encounter, the teacher must be accessible to pupils to help those who encounter difficulties.

When a learner is using a program, he is directly and continuously involved for the entire period. There is no delay. He moves from step to step just as rapidly as he can—just as if there were only one learner and one teacher. This kind of learning is likely to be much more demanding and more strenuous than traditional classroom instruction, and the pupil may experience fatigue more quickly. There is much yet to be learned about the relation between pupil interest and attention span and programed instructional materials. The best

plan for the teacher who uses programed materials to follow is to keep program-learning activities relatively brief, integrating into the study day a variety of other activities such as discussions, creative planning sessions, pupil followup activities, and so forth.

The creative teacher will also supplement program learning materials with audiovisual media. While it seems reasonable to assume that, as experimentation with programed learning continues, the degree of verbalism will be decreased, and a wider variety of learning experiences will be included in available programed materials, the teacher need not rely solely on commercially prepared programs that include such audiovisual materials. A greater variety of learning stimuli and a more interesting program can be devised by the teacher herself by showing an appropriate film, planning a suitable tape or transcription, or arranging a field study trip at a profitable time in the program. The program itself may well call for the use of audiovisual materials to create resource learning opportunities. In such subjects as nature study, language arts, and science, the student can make effective use of sound films, prerecorded tapes, filmstrips, slides, and models and mockups of laboratory apparatus. His work with these audiovisual materials can provide him with the more subtle kinds of information that cannot easily be made available in programs, that is, resource information. Properly integrated into the learning program, such resource information will not only foster more interest in the subject context of the learning program, but may also serve to stimulate pupil initiative to search independently.

The teacher may rely on the program provisions for accomplishing the evaluation stages of learning, but imaginative followup activities must be stimulated by the teacher. Realizing that active pupil participation and creative involvement are the keys to true learning, the good teacher will encourage pupils to plan their own avenues of expression, which will both demonstrate the learning outcomes and reinforce the learned information. Ideas for such followup activities may be suggested and guided by the teacher, but it is the pupils' *self-expression* which is of major importance here, and thus it is desirable that the teacher does not prescribe specific projects.

Thus emerges the possibility of a differentiated kind of educational opportunity that envisions a new climate of instructional materials, a new array of programs and teaching machinery, and a new kind of teaching—all organized to challenge the student. There are many who believe that programed instruction is another factor which will hasten the day of ungraded school organization, more effective team teaching, and closer coordination between library, learning resource centers, and the classroom. However, programed instructional materials—because of their number and bulk—will *increase* the classroom management tasks of the teacher. The teacher should seek the assistance of the school librarian with respect to insuring accessibility to the materials, and students should be assured easy access both to materials and to the records which indicate the status of their progress. It should be possible for students to turn to programed tasks at any time that interest and time permits. For, perhaps the greatest change which the use of programed materials will create for pupils is the feeling of personal responsibility to accept the challenges presented by this communication channel.

The management of the classroom and its organization for programed instructional use presents other challenges. It is inevitable that with heavy reliance on programed materials, the comfortable "togetherness" or homogeneity of the group will be threatened, as fast learners widen the gap between their levels of achievement and those of the slower pupils. It is almost inevitable that successful use of programs will identify those who can concentrate and also possess good attention span, read well, have high intelligence and who move steadily ahead at their own pace. Not all pupils will respond in a positive manner. Those who do not possess these qualities seldom "stay with it." Rather, they fall behind and sometimes give up entirely.

Ultimately, however, increased heterogeneity may be the desired outcome of programed instruction used wisely. For as those who thrive on the thrill of setting their own goals and of reaching out at a pace limited only by their initiative and abilities are identified and grouped, more and better programs can be devised to accelerate these pupils even further. Similarly, those who fall behind can be grouped for special attention and reevaluation, perhaps resulting in the devising of new programed approaches that better meet the levels of interests and abilities present among so-called "slow" pupils.

Such a possibility is quite in contrast to traditional instruction, where pupils from widely diverse backgrounds and of widely differing interests and aptitudes are somewhat arbitrarily grouped according to age-grade levels. The pace at which these heterogeneous pupils learn is geared to the usual recitation situation in which, at best, a pupil may be directly involved for only the few minutes he is responding directly to the teacher's questions or suggestions.

□ SUMMARY

During the ten short years of the existence of programed instructional research and experimentation, unusual progress has been achieved. At first *programed learning* was synonymous with the term *teaching machines*. During this time, an unfortunate emphasis was put on elaborate mechanical hardware. Dealers and audiovisual experts who have noted the decline in school people's interest in teaching machines have equated this with a similar decline in interest in programed instruction as such. This does not seem to be the case. Interest in programed instruction seems to be increasing continually, but most of the learning programs now developed are "packaged" in textbook-like formats, or as a part of simple folios or folders that can be used easily by students.

There is every evidence that programed instruction properly used can take over a large fraction of the time-consuming responsibilities of the teacher which are dependent with information giving per se. As this use of programed instruction is accomplished, the teacher is set free to engage in creative activities which only the human teacher can accomplish. This development would yield great dividends not only to teachers, but to pupils who respond to creative planning and opportunities for personal achievement.

The use of the programed instruction presents new responsibilities for most teachers. These are quite apart from those accepted in the usual organized atmosphere of classroom instruction. Teachers should be alert to new information about the development of programed instruction and to the research evidence which indicates more and more that here is a profitable means of better accomplishing the persisting tasks of instruction and teaching.

How to Pick a Lock

"HOW TO PICK A LOCK" is presented in the format we call 'Programed Instruction'. The subject matter is arranged in a number of small steps called "frames", each of which presents a small part of the total information to be learned. Each frame builds on the information that has preceded it, and prepares you for the information that follows. Most of the frames present new information. Some review important facts or concepts that have been introduced earlier in the programed unit.

Every frame provides a unit of learning to which you respond by writing the answer to a question, completing a sentence, or labeling a diagram. Although none of the questions is very difficult (since previous frames have prepared you to answer them), it does little harm if you get some of them wrong. However, if you read each frame carefully, paying close attention and following instructions, you will probably make very few errors.

INSTRUCTIONS FOR USING THE PROGRAMED UNIT - As you read each frame, write your response on the answer sheet provided. (DO NOT WRITE IN THIS PROGRAMED BOOKLET) Then, refer immediately to the answer section in the back of this booklet to verify your response. The two digit numbers in parentheses (00) appearing in or shortly after each answer blank identifies the correct response in the answer section.

Naturally, the most efficient learning will evolve if you do not consult the answer section until after you have made a response. If you are absolutely sure that you have made the correct response, you do not have to check with the answer sheet. However, if there is the slightest doubt about your response, do not fail to confirm your response immediately.

1

This program will teach you to open certain locks without a key.

It is designed to teach you to:
(CHECK ONE)

- ☐ pick a fight
☐ pick a lock (25)
☐ pick a pocket

2

A self-instructional program is the result of a concerted effort by two groups of people: one group, the "programming staff," collaborates with another group, the "subject matter specialists."

Since there is little normal opportunity to become expert in the questionable art of lock-picking, which of the following would be most qualified as subject-matter specialists:

- ☐ chorus girls
☐ burglars (31)
☐ pickpockets

3

Old Fagin taught Oliver Twist to pick _____

This program will teach you to pick
a(n) _____ (13)

4

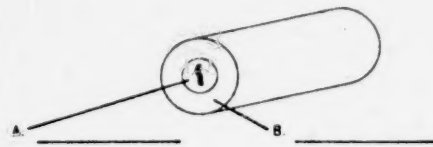
In order to pick a lock efficiently, quietly and with a minimum number of tools, you must first learn something about:

- ☐ the way locks are constructed
☐ the way nits are constructed

(17)

5

Most locks consist of two cylinders, one inside the other. The outer cylinder is called the "barrel." The inner cylinder is called the "plug." Using this information, LABEL the diagram below.



(1)

A. _____ B. _____

If a key is inserted into the lock and turned, it will cause the (☐ barrel ☐ plug) to rotate.

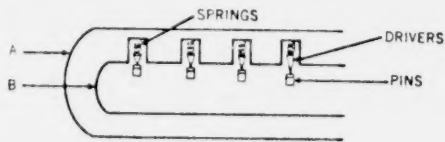
6



In the illustration above, which cylinder is shown pulled forward from the other? _____

What is the other cylinder called? _____ (24)

7



Above is a cross-sectional drawing of a lock.

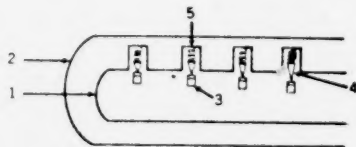
Arrow A points to the _____

Arrow B points to the _____

In addition, other parts of the lock are shown. As the key is inserted, it pushes first against the _____

In turn, there is a push against the _____ directly above, and thirdly, there is a push against the _____ (8)

8



MATCH each part shown in the illustration with its correct name.

- | | |
|------------|---------------|
| A. barrel | 1. _____ |
| B. drivers | 2. _____ |
| C. pins | 3. _____ |
| D. plug | 4. _____ |
| E. springs | 5. _____ (20) |

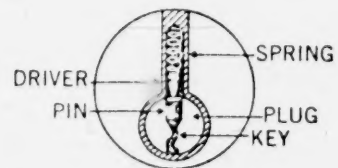
9



NAME the parts of the lock.

1. _____
2. _____
3. _____
4. _____
5. _____ (3)

10



As shown in the illustration above, when the correct key is inserted into a lock, it applies just enough pressure to push which of the following into the barrel?

- ☐ the driver (22)
- ☐ the pin

Which of the following remains in the plug and is free to move with it as the key is turned?

- ☐ the driver
- ☐ the pin

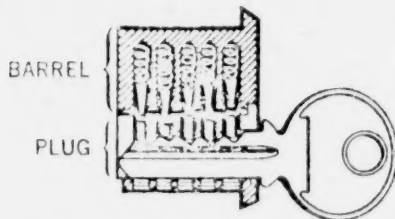
11



In which of the drawings above is the key applying too little pressure to push the driver all the way into the barrel?

☐ A ☐ B (19)

12



An incorrect key has been inserted into the lock shown above. The plug cannot turn because one end of some of the drivers is in the _____ (which cylinder) and the other end is in the _____ (which cylinder).

(29)

13



Which of the illustrations above shows a correct key inserted into a lock?

☐ A ☐ B ☐ C

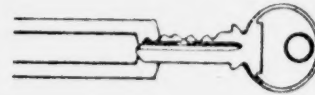
Which shows an impossible situation?

☐ A ☐ B ☐ C

Which shows an incorrect key inserted into a lock? ☐ A ☐ B ☐ C (6)

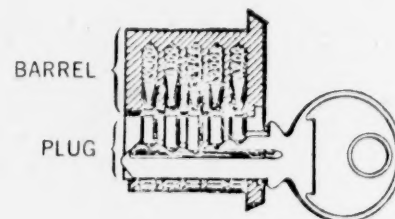
14

In order for a key to lift the pins inside a lock, its dimensions must be such that it can pass into the _____



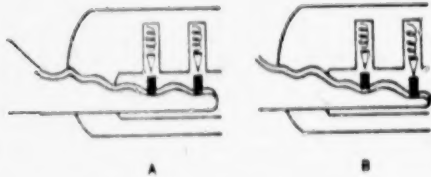
The key above is wrong for the lock (33) shown. It strikes against the _____ and cannot pass into the _____

15



The lock above can be opened, since the plug is free to turn. The plug can be turned because at the intersection of plug and barrel, the bottom edge of each (☐ driver ☐ pin) and the top edge of each (☐ driver ☐ pin) meet. (26)

16



Which plug is not free to turn? A B
EXPLAIN your answer. (11)

17

You have now, inadvertently, learned the fundamentals involved in picking a lock.

In order for a lock to open, what must turn? _____

In order for the above to occur, the lower edge of all the _____ must be lined up with the upper edge of all the _____ right at the outer edge of the _____ (21)

The normal tool for lining up the internal parts of a lock is a(n) _____

18

PREVIEW FRAME

In order to successfully pick a lock, one must align the lower edge of each _____ and the upper edge of each _____ with the edge of _____

Of course, all of the above must be done without the use of a(n) _____

The following frames will teach you how to do this. (5)

19



In diagram A, the plug has been given a slight turn. It is prevented from turning any further by the position of the _____

How far up could the pin be pushed?

In diagram B, the pin has been pushed up until it hits against the inside wall of the barrel. In this position, the plug

- ☐ is free to turn.
- ☐ is not free to turn. (10)

Which diagram above represents the goal of a lock-picker?

20

When a lock-picker, utilizing a hairpin, pushes the pin up, it will stop at the edge of the plug providing that the plug has been turned exactly enough. You can guess that the real artistry involved in successfully picking a lock lies in

- inserting the hairpin
- turning the plug just enough (16)

21

A lock-picker can use a hairpin to push the pins up to the lip of the barrel, providing that he has first given the plug a slight twist.

NUMBER the following events in the order in which a successful lock-picker would carry them out.

- _____ push up the first pin
- _____ push up the second pin
- _____ push up the third pin
- _____ push up the last pin (32)
- _____ twist the plug slightly

22

Once the lock-picker has lined up the tops of all the pins with the edge of the plug, what can he do to the plug?

(2)

23

DESCRIBE the three steps involved in picking a lock.

(28)

24

You have just taught yourself: (CHECK ONE)

- ☐ the legality of picking a lock
- ☐ the technique of picking a lock (14)
- ☐ the risk involved in picking a lock

ANSWER GUIDE

1. A) plug B) barrel - plug
2. He can turn the plug and open the lock
3. 1) pins 2) plug 3) springs 4) drivers 5) barrel
4. plug
5. driver, pin, the plug - key
6. B, C, A,
7. A, B, D,
8. barrel, plug, pins, drivers, springs
9. barrel, plug
10. Driver, Until it hits the inside wall of the barrel., is free to turn, B
11. B, The plug is not free to turn because one driver remains in the plug.
12. pin
13. pockets, lock
14. the technique of picking a lock
15. driver pin
16. turning the plug just enough
17. the way locks are constructed
18. burglars
19. B
20. 1) D, 2) A, 3) C, 4) B, 5) E
21. the plug, drivers, pins - plug, key
22. the driver, the pin
23. springs
24. the plug, the barrel
25. pick a lock
26. driver, pin
27. drivers
28. 1) Insert the hairpin and turn the plug slightly.
2) Push up the pins one by one until they are all lined up with the edge of the barrel.
3) Turn the plug to open the lock.
29. plug, barrel (either order)
30. barrel
31. burglars
32. 2, 3, 4, 5, 1
33. plug, barrel, plug
34. B